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LITHOGRAPHIC ABSTRACTS 1949

Monthly Lithographic Abstracts

July 1948 through July 1949

LITHOGRAPHIC TECHNICAL FOUNDATION, INC.

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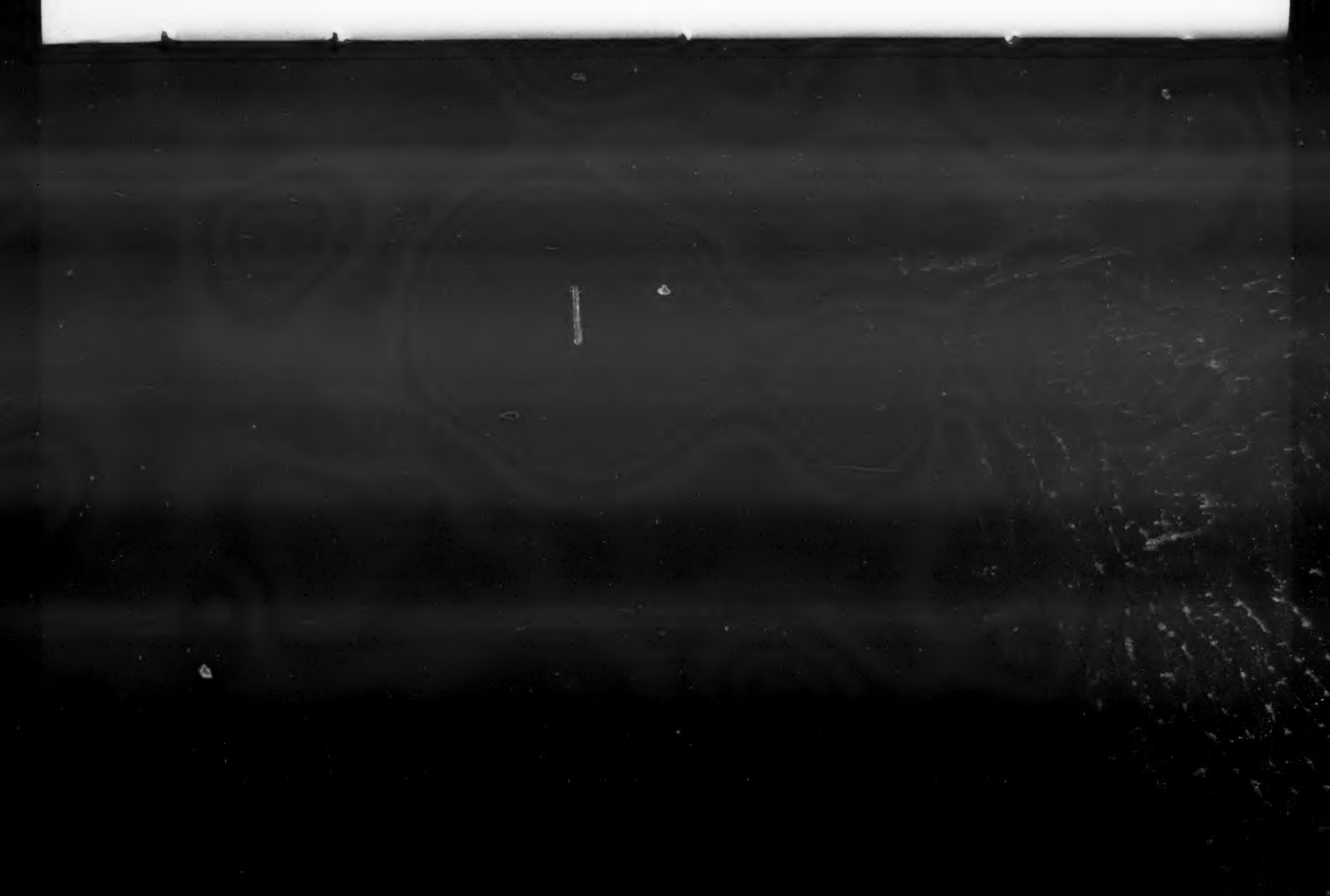

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LITHOGRAPHIC TECHNICAL FOUNDATION, INC.
131 East 39th Street, New York 16, N. Y.

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LITHOGRAPHIC ABSTRACTS

1949

Lithographic Abstracts *are published monthly in the trade press. Because of the exigencies of magazine publication, a complete set of abstracts cannot be had from one source. For this reason, and for the convenience of the lithographic industry, annual publication commenced with the 1947 issue. The months July 1948 through July 1949 are included in this issue. Plans are underway to publish Lithographic Abstracts, prior to 1947.*

Reproduction from more than one source has meant more than one type face—avoidance of which otherwise would have prevented publication.

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Process photography—general

• REFLECTOGRAPHY. J. S. Mertle. *National Lithographer* 55, No. 7, July, 1948, pp. 32-33 (2 pages). This is a process of photographically reproducing line and other originals without the aid of a camera, the reproduction being made by placing the sensitized surface of the photographic material in contact with the face of the original and exposing by passing light through the back of the sentized material. The author discusses the history of the process.

• BASIC FEATURES OF THE "VIVEX" PROCESS. F. W. Coppin, and D. A. Spencer. *Photographic Journal* 88B, July-August, 1948, pp. 78-83 (6 pages). The modification of the Carbo process for three-color prints which was employed commercially until 1939 under the name "Vivex" is described in all essential details. Distinctive features were the simultaneous processing of all three records, a single-bath sensitizer, and the use of "Cellophane" as a developing support.

• PHOTOGRAPHY FOR THE MODERN PHOTOGRAPHER. D. J. E. Wells. *British and Colonial Printer* 143, No. 1038, September 24, 1948, pp. 205-6, 210 (3 pages). The author discusses the work done on tone and color reproduction by Eastman Kodak in the United States. This discussion gives a brief summary of the orange and magenta contact screens, the use of negative masks in contact with Kodachrome and Ektachrome originals, unsharp masks, and the magenta masking procedure.

• PROCESS PHOTOGRAPHY FOR THE LITHOGRAPHIC PROCESS. Karl Davis Robinson. *American Printer* 127, No. 2, August, 1948, pp. 53, 55 (2 pages). This article is the first of a series on process photography for offset, dealing mainly with theory, procedures, and equipment important in the control of variables. A brief resume of lens characteristics and aberrations is given.

• DENSITY IS IMPORTANT FACTOR. Charles F. King. *Inland Printer* 125, No. 5, August, 1948, pp. 39-42 (4 pages). The author explains the definition and measurement of optical density and its relationship to transmission and reflection values. Printing density is discussed and the factors involved in altering printing quality are listed.

MAGNIFIER FOR CAMERAS UNIQUE PLATEMAKERS AID. *Western Printer and Lithographer*, September, 1948, p. 26. Under the name of "Feathersight" the Hollywood Photo Manufacturing Company is marketing a focusing magnifier which can be used on the ground-glass screen of any camera. The device consists of two parts. First is an optically-ground-and-polished 65mm. magnifying lens mounted in an adjustable telescoping tube. The inner tube is scale-engraved to permit repeated adjustment to the individual eye. The second part consists of two Alnico 5 permanent magnets. One magnet is placed on the inside of the ground glass, the other on the outside. Mutual magnetic attraction holds these magnets at any position on the glass, or they may be moved as desired, always carrying with them the magnifying tube.

RELATIVE CORROSION EFFECT ON STAINLESS STEELS OF RAPID FIXING BATHS CONTAINING AMMONIUM CHLORIDE AND AMMONIUM SULPHATE. H. F. Muehler and J. I. Crabtree. *PSAJ* 1946, 13, pp. 30-33. The propensity of acid hardening and fixing baths to attack ordinary 18-8 stainless steel is accentuated by the presence of ammonium chloride 50-gm./litre as used in Kodak F-7 and F-8, but not by ammonium sulphate 60-gm./litre as used in F-9. The attack under controlled experimental

conditions began in areas exposed to the moist vapour and was observed both at room temperature and at 43-degrees C., particularly where the vapour over the solution was more or less stationary or confined. On continued exposure areas immersed in the solution were attacked. Type S16 molybdenum stainless steel was not attacked in the vapour or by the solution. Replacing ammonium chloride 50-gm./litre by ammonium sulphate 60-gm./litre did not upset the hardening, rate of exhaustion or rate of fixing of the rapid fixing bath tested. (*Chemical Abstracts* 1947, 41, 1567). *British Journal of Photography* 95, No. 4590, May 7, 1948, p. 186.

THE PHYSICAL PROPERTIES AND DIMENSIONAL STABILITY OF SAFETY AEROGRAPHIC FILM. J. M. Calhoun. *Photogramm. Eng.*, 13, 163-221, June, 1947. While nitrate base has some advantages in strength, stiffness, slightly lower humidity expansion and thermal expansion coefficients, the present acetate-butyrate base of Eastman Safety Aerographic Film has better uniaxiality and lower long-time shrinkage above 70°F. In chemical stability, however, the safety base is so far superior that its disadvantages are easily outweighed. Acetate base of higher acetyl content, used for a short period in 1946, had better mechanical properties than acetate-butyrate but was inferior in uniaxiality and long-time shrinkage. It is believed that distortion and shrinkage have been reduced to the lowest possible level in the manufacturing process. The paper presents a comprehensive survey of film base problems including sorption of moisture, hysteresis, conditioning and curing of film, mechanical properties, tensile strength, modulus of elasticity, plastic flow, folding endurance and tearing resistance, brittleness, curl, dimensional stability, shrinkage testing methods, humidity expansion, thermal expansion, processing and aging shrinkage, distortion during storage in roll form, in the camera and during processing. If a high degree of dimensional accuracy is required, alcohol should not be employed to accelerate drying. *Photographic Abstracts* XXVIII, Part I, 1948, No. 109, page 21.

ADJACENCY EFFECTS IN PHOTOGRAPHY. R. N. Wolfe and R. S. Barrows. *J. Amer. Phot. Society*, 1947, 13, pp. 554-6. Several previously known development effects caused by the interaction of adjacent images are described and the term "adjacency effects" is proposed for the group. The fundamental reason for good agitation during development is to prevent the accumulation of reaction products which result in adjacency effects. *Chemical Abstracts* 1947, 41, 6165; *British Journal of Photography* 95, No. 4581, March 5, 1948, p. 97.

• STUDIES CONCERNING PROCESS ENGRAVING (In French). W. Lindecker. *Le Procédé* 44, Nos. 5-6, May-June, 1948, pp. 38-42 (5 pages). Screen negatives are made from a gray scale having 16 regions of uniform density (from 0.06 to 0.91) using square, circular, and star-shaped stops. The tone values of the different negatives are measured and compared by plotting K values (K is the proportion of transparent area of the negative to total area) as a function of time. Similar curves are plotted for the etched cuts and final prints. The relation of tone values between negative, cut, and final print is discussed.

•PRINCIPLES OF PHOTOGRAPHY. Charles F. King. *Inland Printer* 122, No. 3, December, 1948, pp. 73-76 (4 pages). This is the first of a series of articles written principally for the beginner in photography for offset printing. It explains the parts of a darkroom camera and the principles on which they work. The importance of knowing lenses and their

abilities and limitations is pointed out. Calculating distances, reproduction of the copy and differences in light intensity are discussed for the beginner.

LINE PHOTOGRAPHY FOR THE LITHOGRAPHIC PROCESS, Revised Edition. Karl Davis Robinson. Skilled Craft Text Published by Lithographic Technical Foundation, October, 1948, 123 pages, $1.00. This text covers line photography as practiced in the lithographic plant, and is written for on-the-job training courses in organized or in-plant schools. It is not organized as a reference book, but follows the lesson plans and job sheets of the LTF course in line photography. This is a revised edition and contains information on such recent developments as fine line development, use of photoelectric photometers to check eveness of illumination on the ground glass, and use of integrating light meters on the copyboard. The book contains numerous charts and illustrations to supplement the text material. This revised edition has been read in manuscript by many photographers and technicians in the lithographic industry and their constructive criticisms have contributed largely to the revision.

•PROCESS PHOTOGRAPHY FOR THE LITHOGRAPHY PROCESS. Karl Davis Robinson. *American Printer* 127, No. 5, November, 1948, pp. 41, 43, 45 (3 pages). Formulas and instructions are given for calculating and constructing diagrams to aid in adjusting light distribution on the copyboard.

• PROCESS PHOTOGRAPHY FOR THE LITHOGRAPHIC PROCESS. Karl Davis Robinson. *American Printer* 127, No. 3, September, 1948, pp. 49, 53, 55-6 (4 pages). Control of exposure variables is very necessary in process photography. The allowable tolerance in exposure of process emulsions is small, so that ways are necessary for controlling the variables. Control of exposure can be handled by a light integrating meter on the copyboard. However, color temperature changes must still be contended with. Variations in light distribution at the focal plane are discussed and the reasons for not desiring even copyboard illumination are explained.

• PROCESS PHOTOGRAPHY FOR THE LITHOGRAPHIC PROCESS. Karl Davis Robinson. *American Printer* 128, No. 1, January, 1949, pp. 43, 45, 49, 50 (4 pages). In line photography the practice has grown of establishing a standard exposure with variable apertures. However, exposure can be more accurately controlled by varying exposure time while diaphragm aperture (at maximum resolving power) and illumination on the copyboard remain constant. In halftone photography, where aperture is varied as one factor in the control of contrast, variation of the time of the basic exposure for one of the several apertures with variation of reproduction ratio must necessarily be used.

• PRACTICAL LINE PHOTOGRAPHY. Melvin Gevert. *Lithographers Journal* 33, No. 10, January, 1949, pp. 8, 49 (2 pages). This article discusses some of the problems confronting the line photographer and some of the theory that he might find of value. Charts for adjusting exposures and apertures for changes in enlargement or reduction and for changes in arc angles are presented.

• PHOTOSTATS IN OFFSET COPY. Ray M. Hogan. *Modern Lithography*, 17, No. 1, January, 1949, pp. 29, 95 (2 pages). The many uses of photostats in lithography are listed and discussed. Predetermined areas on a working drawing can be accurately fitted with photostats, giving complete copy for checking and photographing. Photostats can be made of finished working drawings and sent out for OK's. Type

matter, or line illustrations can be made into reverse-color photostats to sizes required and used for reproduction copy. The procedure by which a photograph or halftone proof can be easily and accurately converted into a line drawing is described and illustrated. Instructions are also given for using photostats to advantage in assembling line drawings into a composite design.

• THE MERCURIC CHLORIDE INTENSIFIER. Richard B. Willcock. *British Journal of Photography* 96, No. 4628, January 28, 1949, pp. 39-41 (3 pages). The author reviews two-bath mercuric chloride intensifiers. These include blackening the bleached image with sodium sulfite, ammonia, Monckhoven's blackener, normal redevelopment, sodium sulfide, and thiocarbamide. Details of their use are described.

PHOTO-MECHANICAL PRINTING PROCESSES. B. Liebowitz. *British Patent No. 576,838* (August 9, 1943). A halftone negative having opaque portions corresponding to the highlight sections of an original drawing and halftone portions corresponding to the tone sections of the drawing, is produced on light-sensitive photographic material by giving the tone sections of the drawing such a color that at least the lightest portions of the tone sections have a tint to which the light-sensitive material is little sensitive and by thereafter photographing the drawing on to the light-sensitive material successively through a halftone screen and without the screen. *Abridgement of Specifications, British Patent Office,* Group XX, Series 560,001 to 580,000, pp. 287-8.

• RESEARCH RESULTS ON HALFTONE DOT FORMATION AND STRUCTURE. Arthur P. Eymann. *Photo-Engravers Bulletin* 38, No. 6, January, 1949, pp. 12-23 (12 pages). The author discloses the results of his experiments on the formation and structure of the halftone dot. He concludes from his results that during the exposure, keeping other factors constant, the most stable results are given if the aperture size is not altered (one-stop).

THE HADEGO PHOTOCOMPOSING MACHINE. H. J. A. De Goeij. *Brit. Printer,* 1948, 61 (363), 20-3 (November-December). The design and functions of the Hadego Photocomposing Machine are described. It is a combination of a special automatic production camera and a "step and repeat" machine. All operations are completely automatic and are controlled from a dashboard. The operation of the machine consists of the following stages: setting and spacing enlargement ratio reading; adjustment of enlargement; exposure; moving up of filmholder. *Printing Abstracts* 4, No. 1, January, 1949, pp. 10-11.

• DIAZOTYPE PROCESSES AND APPLICATIONS. S. C. Slifkin. *Modern Lithography* 17, No. 3, March, 1949, pp. 36, 99 (2 pages). The two types of diazo processes in commercial use, the dry process, and the moist or semi-wet modification, are described. A direct positive of the original is produced by both these processes. By the proper choice of diazonium compounds and coupling components, a wide variety of colors can be produced. Various speeds and contrasts are also possible which provide materials suitable for line or continuous tone reproduction purposes. The uses of Ozachrome and Lithofoil in lithography, and additional current and future applications of Ozalid materials in the graphic arts are described.

• MORE ON CAMERA-OPERATING TECHNIQUES. Charles F. King. *Inland Printer* 122, No. 6, March, 1949, pp. 57-59 (3 pages). This article continues the series on camera operating techniques. One-, two-, and three-stop methods are described including the flashing step. Care in using only those steps in a gray scale that correspond to the density range of the copy is stressed when using the gray scale as a guide.

• TONE VALUES AND SCREENS. Charles F. King. *Inland Printer* 122, No. 4, January, 1949, pp. 53-56 (4 pages). The author discusses the fundamentals

of halftone photography. The article covers the function of the halftone screen, how it performs, and basic procedures in its use.

* PROCESS PRACTICE: LIGHTING FOR CAMERA WORK. Frank H. Smith. *Process Engravers Monthly* 56, No. 664, April, 1949, pp. 114, 116 (2 pages). Mercury lamps suitable for lighting camera work are described.

* THE ECONOMICS OF FLUORESCENT LIGHT IN PHOTOENGRAVING. Harvey T. Holsapple. *Photo-Engravers Bulletin* 38, No. 10, May, 1949, pp. 3-7 (5 pages). The author briefly describes the differences in the Kodak Flourescent Process, the Kemart Process, the Fluorographic Process, and the Kromolite Process.

* INTENSIFICATION AND REDUCTION. Charles W. Gamble. *Process Engravers Monthly* 56, No. 664, April, 1949, pp. 106, 109 (2 pages). A discussion of density and how it can be changed by intensification and reduction. Intensifiers for collodion plates are given.

* PRE-SCREENED GLOSSY PRINTS. Gordon Gullickson. *Modern Lithography* 17, No. 6, June, 1949, p. 38 (1 page). A pre-screening process used by the *North Virginia Free Press*, a weekly offset newspaper, is described. A screen is shot on each glossy print at time of enlargement. Then this screened print is pasted up with the ordinary copy and the whole works shot as a straight line job. The only equipment required in addition to ordinary photoprint facilities are an 8 x 10 magenta contact screen of 100 or 120 lines per inch and a pressure film holder. In addition to cutting printing costs, prescreened photographs facilitate copy-preparation. They are pasted on graph paper and cropped after they are securely cemented in place. It is no longer necessary to number photographs or write special instructions to printer with each.

* TONE CONTROL IN PLATEMAKING. George W. Jorgensen. *Lithographers Journal* 34, No. 2, May, 1949, pp. 11, 47 (2 pages). The LTF Sensitivity Guide enables measurement of coating sensitivity, which, in turn, permits the control of tone reproduction in platemaking. It is basically a continuous tone gray scale with equal density increments between steps. It adds up the effects of all variables on coating sensitivity, and can be used to calculate correct exposures.

* COLOR FROM BLACK-AND-WHITE. *Photo-Engravers Bulletin* 38, No. 11, June, 1949, pp. 57-59 (3 pages). A simple and extremely flexible color conversion process for the professional production of full-color pictures from black-and-white negatives or from color transparencies is announced by the Eastman Kodak Company. The technique, known as the Kodak Flexichrome Process, uses color dyes to convert a special photographic print to a full-color picture. The dyes are applied with water color brushes, but are true dyes rather than water color or oil paints.

PROCESS OF PREPARING POLYMERS. M. M. Renfrew, assignor to E. I. du Pont de Nemours and Co., Inc. *United States Patent No. 2,448,828* (September 7, 1948). In a process of preparing polymers which is claimed, a photopolymerizable unsaturated organic compound with ethylene linkages is irradiated with light of a wavelength of 1800 to 7000A. in the presence of 0.01 to 1.0 per cent by weight of a photo polymerization catalyst, consisting of an acyloin ether of the formula,

$$\begin{array}{c} R\text{—}CH\text{—}C\text{—}R' \\ R''\text{—}O \quad\ O \end{array}$$

where R, R', and R" are monovalent hydrocarbon radicals. The time required for photopolymerization is said to be materially decreased by the presence of the catalyst, without sacrifice in quality of the product. *Monthly Abstract Bulletin* 35, No. 2, February, 1949, p. 83.

* H. NEROT CORRECTION DEVICE FOR TRICOLOR MASKING, MODEL PM (In French. *Le Procédé* 45, Nos. 5-6, May-June, 1949, pp. 43-4 (2 pages). This is an attachment for transparencies which includes a device for holding color correction masks. It is connected with the copyboard frame and permits the exchange of masks during exposure.

Photographic materials

DIMENSIONAL STABILITY OF SENSITIZED PHOTOGRAPHIC MATERIAL. A. A. Ray. *Photo. JJ.* 87B, 135-36, Nov-Dec., 1947. A survey is made of the extent to which ordinary photographic films, plates and papers are dimensionally stable, and brief mention is made of special materials in which the base includes aluminum foil or is waterproofed. *Photographic Abstracts* Part 2, 1948, p. 77.

•VINYL PLASTIC SHEETS FOR LITHO PRODUCTION. Henry P. Korn. *Modern Lithography* 16, No. 12, December, 1948, pp. 35, 106 (2 pages). The substitution of vinylite plastic sheets for glass plates in the litho shop is discussed. The available forms of vinylite sheets and methods of coating are described.

DRY DEVELOPING NEGATIVE Sam Charles Slifkin, assignor to General Aniline and Film Corporation. *United States Patent 2,459,136* (January 11, 1949). A process of reproduction which comprises subjecting a base having a coating comprising mercuric chloride, ammonium oxalate and ferric oxalate to light from an image to be reproduced, then exposing said composition to ammonia. *Official Gazette* 618, No. 2, January 11, 1949, p. 634.

Film processing

• A NEW METHOD FOR POSITIVE REVERSAL. S. R. Audus. *Process Engravers Monthly* 55, No. 656, August, 1948, pp. 236-7 (2 pages). To effect a positive reversal, a very thin image (about 25% of normal) is produced, and developed for the normal time. Without removing the plate from the developer, a second exposure is made to white light, this exposure being the maximum that may be given without printing through the wash (the thin image). Then leave the plate in the developer for a further two-thirds of the original time, after which it is washed and fixed as usual. The first exposure leaves a wash of light fog which can be cleared with any common reducer. This method works best with emulsions of the thin film type.

Light sources

• HIGH - INTENSITY PROJECTION ARC LAMP. Charles A. Hahn. *Journal of the Society of Motion Picture Engineers* 50, No. 5, May, 1948, pp. 489-501 (12 pages). This paper describes mechanics and design of the Peerless Hy-Candescent 120-to 180-ampere projection arc lamp, the Hy-Speed condenser-lens system, and the light heat filter unit.

• THE USE OF FLOURESCENT LAMPS FOR MAKING COLOR-SEPARATION PLATES. R. E. Farnham. *Photo-Engravers Bulletin* 38, No. 4, November, 1948, pp. 46-47, 50-54 (7 pages). A discussion of the general procedure for making color-separation negatives by the use of flourescent lamps. By this method the hand correction work has been reduced from 30 to 80%.

NEW DEVELOPMENTS IN MERCURY LAMPS AND THEIR APPLICATIONS. E. W. Beggs. *Illum. Engineering*, 42: 435-62, April, 1947. The article is a general survey of the complete line of mercury-vapor lamps now offered by American manufacturers. Data are given, in tabular form, covering operating characteristics, dimensions, vapor pressure, life, etc. In one of the figures accompanying the article, the spectral-transmission curves of fused quartz and of the various glasses used in constructing mercury lamps are given. Applications of this type of lamp, such as in illumination, excitation of fluorescence, projection, photochemistry, and bactericidal tech-

niques are given. *Monthly Abstract Bulletin*, Kodak Research Laboratories 34, No. 3, March, 1948, p. 105.

Light control

• NEW WESTON LIGHT INTEGRATOR FOR THE GRAPHIC ARTS. *Photo-Engravers Bulletin 37*, No. 10, May, 1948, pp. 36-7 (2 pages). A new light integrating meter has been announced by the Weston Electrical Instrument Corporation. The device consists of two units, the integrating and controlling mechanism, and a photovoltic cell. The integrator includes an indicating instrument which indicates the light intensity on the light target.

• EXPOSURE METER FOR PRECISION LIGHT DOSAGE. Herbert F. Launer. *Review of Scientific Instruments* 20, No. 2, February, 1949, pp. 103-9 (7 pages). A precision light integrator operating on the principles used in commercial models, and good to 0.18%.

Lenses

DEVICE FOR CAMERA OR PROJECTOR LENSES FOR PRODUCING REVERSED IMAGES. Don Meyer. *United States Patent No. 2,442,564* (June 1, 1948). A device for forming reversed images, comprising a lens, an exteriorly threaded tubular member in which said lens is mounted, adapted for cooperation with a threaded support to focus the lens in response to rotation of said tube, a second tube telescoped in said member and rotatable with respect thereto, image reversing means and means mounting said image reversing means in said second tube, said mounting means being adjustable to change the position of said image reversing means to bring the beam emerging from said means into alignment with the entering beam, relative rotation of the tubes serving to cause the image to be presented in the desired position. *Official Gazette* 611, No. 1, June 1, 1948, p. 197.

• FACTORS AFFECTING NEEDED FOCAL LENGTH OF LENS. Kenneth R. Burchard. *American Printer* 127, No. 4, October, 1948, pp. 47-48 (2 pages). The author discusses a number of the factors involved in selecting the focal length of a lens. The main considerations are: (1) negative size required, (2) scale of reduction or enlargement, (3) bellows extension limits, (4) camera bed length. Simple formulas and tables are given to aid in selection of the proper focal length lens.

• ERRORS IN CALIBRATION OF THE F NUMBER. Francis E. Washer. *Journal of the Society of Motion Picture Engineers* 51, No. 3, September, 1948, pp. 242-260 (19 pages). The present system of marking the diaphragm stops in terms of the geometric f number is subject to serious deficiencies so far as uniform performance for lenses set at the same marked stop opening is concerned. Decisions regarding the proper exposure time to use at a selected stop opening may be in error by ± 10 per cent for a lens whose surfaces do not have antireflection coatings, and by even greater amounts for a lens whose surfaces do have antireflection coatings. These errors arise from differences in the reflection and absorption losses in the lens elements themselves, departures of the measured from the nominal focal length, and departures of the measured diaphragm openings from the nominal diaphragm openings. A method is described whereby a lens can be calibrated by a light meter in terms of an ideal lens so that the variation in axial illumination in the focal plane need not exceed ± 2 per cent in using different lenses set to the same calibrated stop opening.

• LENS AND CAMERA FLARE — HOW TO CHECK FOR IT AND HOW TO PREVENT IT. George W. Jorgensen. *Research Progress* 1, No. 10, November-December, 1948, pp. 1, 2, 4 (3 pages);

Lithographers Journal 34, No. 1, April, 1949, p. 11 (1 page); *American Printer* 128, No. 4, April, 1949, pp. 48-49 (2 pages). Lens and camera flare are defined together with the troubles that usually identify them. The causes of the two general types of flare and how they can be checked or prevented are described.

• CALIBRATION OF PHOTOGRAPHIC LENS MARKINGS. *Technical News Bulletin* 33, No. 4, April, 1949, pp. 50-51 (2 pages). Some of the new methods proposed to give greater precision in the speed markings of lenses are described briefly. Several of the proposed methods give weight to the variations in the loss of light for different lenses.

Crossline and related screens

• HALFTONE SCREENS FOR LITHOGRAPHY. J. S. Mertle. *National Lithographer* 55, No. 9, September, 1948, pp. 36-37 (2 pages). In this, the first of a series on the halftone screen for lithography, the author writes about the earliest discoveries that made it possible. He discusses early wood engravings, attempts at etching the silver-amalgam images of daguerreotypes, and the Talbot process which first used a fine pattern image from black gauze to break the image into many separate small portions which would hold the ink better.

•HALFTONE SCREENS FOR LITHOGRAPHY. Part IV. J. S. Mertle. *National Lithographer* 55, No. 12, December, 1948, pp. 28, 29, 84, 85 (4 pages). This is the fourth of a series of articles on halftone screens for lithography. Patents of Francis and Louis T. Kossuth in 1866, H. de F. Reaulx and A. Barret in 1868 and Wm. A. Leggo and George E. Desbarats in 1865 and 1871 are discussed. The latter patent was for a halftone process in which Leggo contemplated relief and lithographic halftones as well as those of intaglio character. The patent itself is not as important as were the results obtained by Leggo.

• HALFTONE SCREENS FOR LITHOGRAPHY, Part V. J. S. Mertle. *National Lithographer* 56, No. 1, January, 1949, pp. 32-33 (2 pages). The British patents of Faulkner, Placet, Swan, and Bell are discussed. The halftone screens were supposed to be formed by photographing various patterns, such as wire screen, cloth, or net. These photographic or actual wire screens were used in contact between the continuous tone film and the sensitized plate.

• HALFTONE SCREENS FOR LITHOGRAPHY. Article 6. J. S. Mertle. *National Lithographer* 56, No. 2, February, 1949, pp. 38-9, 81-2 (4 pages). A recount of the contributions of Frederic E. Ives to halftone reproduction. His first process was a "woodburytype" (1880) utilizing a plaster cast made from a gelatin relief image. A rubber stamp pad, cut with V-grooves, would squash when pressed against the cast to transfer various sized dots to its surface, depending upon the depth of the relief at each point. His first halftone screen (1886) was made by ruling parallel lines on 2 blackened collodion plates and cementing them together.

• HALFTONE SCREENS FOR LITHOGRAPHY, Part VII. J. S. Mertle. *National Lithographer* 56, No. 3, March, 1949, pp. 36-37, 93-4 (4 pages). In this article, the seventh in a series on halftone screens, the author discusses the work of Meisenbach with single line screens, the ruling of glass screens by Schmaedel, the single line screen of Angerer, and the proposal of Borland to use mechanical screens of wire or cloth. The importance of the concept of screen separation in each of the above methods is discussed.

HALFTONE SCREEN FOR USE IN THE MANUFACTURE OF PRINTING PLATES. Walter S. Marx, Jr., assignor to Printing Arts Research Laboratories. *United States Patent No. 2,468,680* (April 26, 1949). A halftone screen adapted to use in a photographic reproduction

process with an emulsion having an upper limit of light sensitivity of approximately 6,000 angstrom units and comprising, in combination, a sheet of material having transparency of over 80% to all light in the visible and ultraviolet ranges between 3,400 and 7,000 angstrom units, said sheet having lines thereon disposed in transversely intersecting relationship, and said lines being characterized by their substantially complete absorption of all light within the range of 4,000 to 6,000 angstrom units and a transparency which ranges to more than 70% to the ultra-violet light between 3,400 and 4,000 angstrom units. *Official Gazette* 621, No. 4, April 26, 1949, p. 1247.

* HALFTONE SCREENS FOR LITHOGRAPHY. J. S. Mertle. *National Lithographer* 56, No. 5, May, 1949, pp. 44-5, 96, 98 (4 pages). The author begins the story of the early efforts of the Levy Brothers to develop a halftone screen. The research material for this article includes the first ten years of records of Max Levy. The early work of Louis Levy with the swelled-gelatin process and Max Levy's method of making screens are described.

* HALFTONE SCREEN FOR VIEWING AND PRINTING, Richard Naumann. *French Patent No. 905,087* (3 pages). A halftone screen employing cross—or star-shaped patterns. The cross—or star-like openings of this screen are arranged in groups of five, four forming the corners of a square, the opening of the fifth being parallel to its diagonals.

* ON THE EVOLUTION OF THE HALFTONE SCREEN. (In German). Arthur Wenzel. *Das Druck Gewerbe*, April, 1949, pp. 115-117 (3 pages). The development of processes leading to the production of halftone images is traced. The available methods can be roughly divided into three groups: (1) a screen pattern is introduced into either the original or the photographic emulsion, (2) a grain screen is produced after the development of the photographic emulsion (collotype grain), (3) the glass or film screens used a certain distance away from the photographic emulsion. The crossline screens of the third group are preferable to the others. There are also the Kodagraph Contact Screen, a crossline screen consisting of transparent blue and yellow lines used for line and halftone combination negatives (Swedish Patent No. 82484, Class 57: d: 7), the International Duplex Screen, and the Fluorographic Screen. A film containing an embossed lens screen was first put on the market by Liesegang in 1896. One of its advantages would be a considerable shortening of exposure time.

HALFTONE SCREEN HOLDER. Herbert Gelb, assignor to Joseph Gelb. *United States Patent No. 2,473,023* (June 14, 1949). Means for selectively photoprinting in halftone a sensitized plate upon which an image is projected by light reflected from a subject, comprising a frame having a central rectangular opening the edges of which are successively rabbeted and thereby provide a plurality of stepped surfaces of decreasing periphery from the front to the rear portion of said frame, said frame being adapted to be fixedly positioned before and in parallelism with said plate with the rear portion of said frame nearest said plate, and a plurality of screens of different peripheral dimensions and of different line-counts, the periphery of each such screen being an index of the line-count thereof and the line-count of said screens decreasing as the peripheries thereof increase, the screen of greatest line-count having substantially the periphery of the smallest of such surfaces and each other screen having a periphery substantially that of another of said surfaces, so that any surface against which a screen is fitted constitutes a gage to insure that said screen is properly positioned at a distance from said plate in accordance with the line-count of said screen. *Official Gazette* 623, No. 2, June 14, 1949, p. 487.

Contact screens

* PRACTICAL HALFTONE PHOTOGRAPHY. Melvin Gevert. *Lithographers Journal* 33, No. 12, March, 1949, pp. 8-10 (3 pages). A general discussion of the care and usage of glass and contact screens. Suggestions are given for

finding the proper type of halftones to fit the needs of each plant's pressroom.

• DIFFRACTION AND HALFTONE SCREEN NEGATIVE-MAKING. Walter J. C. Hislop. *Process Engravers' Monthly* 56, No. 663, March, 1949, pp. 73, 74, 77 (3 pages). A simple discussion of the theory of the glass screen and some practical procedures for its use.

• SUPERIOR TONE RENDITION NOW POSSIBLE AS RESULT OF CONTACT SCREEN DEVELOPMENTS. Charles F. King. *Inland Printer* 123, No. 2, May, 1949, pp. 61-63 (3 pages). The author discusses the Kodak orange and magenta screens, explaining their functions and the procedures followed in preparing screen transparencies with each type of screen.

• MAGENTA CONTACT SCREENS PERMIT HIGHER QUALITY TONE REPRODUCION. Charles F. King. *Inland Printer* 123, No. 3, June, 1949, pp. 65-68 (4 pages). An explanation of the use of the Kodak magenta contact screen and its accompanying exposure guide. Some ideas for the construction of a vacuum back are given. The author comments on the higher quality of tone reproduction obtained with the contact screen as against the glass halftone screen.

Copy preparation

• COPY PREPARATION TECHNIQUE FOR COLOR REPRODUCTION. William Sherwood. *American Printer* 127, No. 1, July, 1948, pp. 38, 39, 40 (3 pages). The author reviews recent developments in the process of making direct and indirect prints for color engravings. Discussed are transparencies, and reflection prints of Carbro, Printon, Dye Transfer, Kodachrome Proffessional Prints, Ansco Color Paper, and Gasparcolor.

• COPY REQUIREMENTS FOR OFFSET LITHOGRAPHY. A. Albert Freeman. *American Printer* 127, No. 2, August, 1948, pp. 49-51 (3 pages). Requirements for line copy, halftone copy and combinations of the two for both black and white and color reproduction are discussed.

HOW TO PREPARE ART AND COPY FOR OFFSET LITHOGRAPHY. William J. Stevens and John A. McKinven. Book published by Dorval Publishing Company, 1948, 107 pages, $5.25. The book starts with a brief description of the lithographic process and discusses the various steps of planning the job and preparing copy for it. There are chapters on design, planning and photography for reproduction, retouching, type proofs, preparing art work, making the paste-up, and art for color processes. A glossary and index are included.

Tone and color correction

• COLOR CORRECTION PATENTS. Frank Preucil. *National Lithographer* 55, No. 6, June, 1948, pp. 32, 33, 108 (3 pages). This is the first of a series of articles on color correction patents. Beginning with the old German patents, Dr. E. Albert's method of masking the three color separation negatives with a positive of the black printer so as to lighten the black and gray in each color is reviewed. A later patent suggested removing the presence of complementary colors by masking each separation negative with a positive made from a negative exposed through a complementary filter. An alternate method, which saved making three extra negatives, but gaining the same color correction was to correct each separation negative with a positive made from the two other separation negatives combined. A method similar to this was patented for the purpose of reducing the drying time of the inks by reducing the overlap of color in the black areas.

• COLOR CORRECTION PATENTS, PART II. Frank Preucil. *National Lithographer* 55, No. 7, July, 1948, pp. 30, 31 (2 pages). Theis, in German Patent 494,089, proposed to make the mask weaker than the Albert masks in order to retain the blacks

solid with just three colors. Instead of alternate exposures through red and green filters for the black printer, Theis used an equivalent single yellow filter exposure. Eaton in U. S. Patent 2,142,-437 stated that the total amount of ink in the solid black areas of four color magazine printing should not exceed 200%. The usual positive or negative masking systems do not remove enough black to meet this requirement so Eaton added a flash exposure. Pfenninger and Townsend in British Patent 26,608 recognized that the red printer did the most damage and relieved the situation by running it in a light pink ink so that the blues and greens were cleaner. The missing strong red areas were supplied from a red accenting plate made from a combination of the yellow and red separation negatives. A new approach to color correction was made by Gamble in British Patent No. 6,768. Gamble's apparatus consisted of a process camera with the addition of one or more smaller camera - projectors which could project an image of the mask onto the copyboard. The resulting separations thus would have higher densities where the masks were clear. The R. R. Robertson Company made a similar camera which minimized the distortion of the images. Raschke, in U. S. Patent 1,373,020, made a special camera with two swinging frames which could be alternately positioned in front of the plate. One carried the mask and the other a compensating sheet of glass. Hahn, in U. S. Patent 1,576,118, designed a camera back for use of negative masks, the method being similar to the currently recommended magenta masking system.

• COLOR CORRECTION PATENTS. PART III. Frank Preucil. *National Lithographer* 55, No. 8, August, 1948, pp. 38-9, 68 (3 pages). This is the third in a series by the author on color correction patents. Hatt, in U. S. Patent 1.349,956, devised a means of providing separation negatives with integral color correction work. He coated the separation negative with iodized wet plate collodion and obtained the added mask image by exposure to one of the other separation negatives in a fixed focus, same size camera. In U. S. Patent 1,518,426, he describes four methods of masking; applying the mask to the sketch; a negative mask in the camera; incorporation of the mask image in the contiguous layer; and positive masks as cover glasses for the separation negatives. U. S. Patent 1,569,124 deals more specifically with applying mask correctors, either bleached white or intensified and blackened, directly to the sketch. Another interesting series of patents by Wilkinson is discussed. In U. S. Patent 2,004,144, a procedure using thin positives from the blue and yellow separations with density ranges in accordance with the conditions encountered, is outlined. Wilkinson developed a method of making color corrected contact halftone positives using a conventional glass screen. He first placed the halftone screen on the printing frame glass, then the glass separation negative and mask, and then on high contrast dry plate. Exposure was made 7 to 8 feet from the lamp. For additional contrast, extra screen distance was obtained by inserting glass spacers. A later patent, U. S. 2,099,916 uses color corrected or masked masks. This was to avoid taking too much blue out of greens on the yellow separation when masking. To correct this secondary effect, the greens in the blues were held back with a yellow positive while exposing the new type mask. A similar correction was made for the blue separation.

• COLOR CORRECTION PATENTS. Frank Preucil. *National Lithographer* 55, No. 9, September, 1948, pp. 34-35 (2 pages). The author completes his study of the Wilkinson patents. In United States Patent 2,114,325 Wilkinson used the separation negatives

having the most highlight detail to make a contrasty positive on which all values of white were opaqued. A highlight blockout negative was then made on process film and used with each separation negative while making the positives. In United States Patent 2,124,679 he replaced ordinary photographic film masks with much thinner layer of a strip film and a dyed bichromated glue image. In United States Patent 2,174,812 he combined the two masks (color and white) by coating the original separation negatives with a light sensitive collodion emulsion and making an exposure of each mask onto it. In United States Patent 2,177,195 he used a red separation mask on the yellow printer. The same problem of combined white highlighting and color correction was approached in a different manner by Wilhelm Schupp, a German. Dr. Schupp masked halftone negatives which have soft edged dots with high contrast masks. In German Patent 477,808 he revealed a color chart designed to aid color retouchers by giving them a visual example of color tone values singly and in mixtures. In German Patent 694,459 Schupp describes a color chart designed to help photographers. Ten different colors are used in nine graded steps and photographed with a gray scale whose steps are marked with Ostwald's notation. The degree of color error and saturation is judged by comparing and matching the densities of the color squares with the gray scale values. Schupp devised a method of color correction using only four films or plates. Yellow, red, and blue separation negatives were made on soft working film. The red negative was then registered with the image and a panchromatic steep gradation film exposed through it using a blue-red filter and a blue-violet filter. Developed with a strong developer, the resulting image was neither a negative or positive in relation to black of the gray scale. The new film contained only color densities to hold back the unwanted colors when used as a mask on the yellow separation. The mask for the red separation was made by mounting the blue filter negative in register with the image and exposing another steep gradation panchromatic film through it with one or two special green filters. The black printer is made from a combination of the blue seperation with the two special masks, thus achieving a black with pure dark colors completely taken out.

• COLOR CORRECTION PATENTS. Article 3. Frank Preucil. *National Lithographer 55*, No. 10, October, 1948, pp. 40-41 (2 pages). Kronschnabl and Boettger in German Patent 592,003 claimed a method which almost completely eliminated retouching. The method is based on the use of negative masks in the camera during part of the separation exposures. The patent also reveals the value of negative masks in the camera to shorten the brightness range of long scale reproductions. In British Patent 427,234 of Van Straaten, a process related to Wilkinson's system but using positives of each image exposed onto another positive is described. The separation negatives are coated with gelatin and sensitized with bichromate, then exposed to positive masks. The image is brought out in the unexposed portions by treating with aniline dye. Hausleiter, in British Patent 360,441, described four masking methods. These methods are based on uses of two types of masks which he calls "auxiliary" and "supplementary." His first method uses a yellow filtered mask negative in the camera during all the separation exposures. His second method made use of denser auxiliary masks in the camera during the separation exposures. Then supplementary positive masks are used on the negatives. The third method provided correction for the in-

taglio processes by applying the masking at a different stage of the procedure. Normal separation negatives are prepared and printed to give uncorrected positives. Supplementary masks are then made, then auxiliary masks, with the step of making a contact reverse color image of the supplement added. The positives of these separations and the reverse supplementary masks are then exposed onto pigment tissue as a combination print. The fourth method applied masking to do the work of automatic staging on the positives for dot etching. Halftone positives are made from each of the usual separation negatives and then a supplementary mask made for each color. The supplement is double exposed onto the halftone positive before development. Subsequent reduction of dots is then considerably more in unmasked areas when subjected to the etching solutions. Hausleiter's German Patents 540,525 and 541,341 are also concerned with controlling the etching of dots. A gelatin layer on the halftone positive is made less liquid penetratable by exposure through a mask thus light hardening it with action of the chromium sensitizer. Subsequent immersion in an etching solution reduced the silver dot image under the unhardened areas. A method is also described using ferric chloride as the sensitizer.

• COLOR CORRECTION PATENTS. Article 6. Frank Preucil. *National Lithographer* 55, No. 11, November, 1948, pp. 36, 37 (2 pages). In this, the sixth article in a series on color separation, the author reviews the work of Hensel, Van Straaten, Ellsworth and MacKay. Hensel prepared extra negatives through the orange filter which were printed in albumin over the usual enamel image to control the degree of etching the halftone. Van Straaten used a color chart in his exposures to determine the proper densities for the masks. Ellsworth made a similar chart printed with the inks used on the press. MacKay used a similar chart but prepared his masks for each negative with a positive made from a negative the color of whose filter was adjacent towards the red end of the spectrum, leaving the negative from the red end uncorrected.

• COLOR CORRECTION PATENTS. Article 7. Frank Preucil. *National Lithographer* 55, No. 12, December, 1948, pp. 30, 31, 84 (3 pages). In U. S. Patent 2,244,992, Salvador Guerro of Mexico City proposed detailed controls for the entire reproduction sequence by use of a special color chart photographed with the sketch. To determine the color error of each separation, negative densitometer measurements were made of the solid color areas of the chart and the white density. The blue filter negative was corrected by a positive mask from green filter negative and one positive from the red filter negative. The green filter negative was combined with a positive mask from the red filter negative. The gray printer was combined with a blue filter positive. In U. S. 2,354,149 Benjamin Sites also included a color chart control. The patent illustrates a graphical method of visualizing and studying color. Color correction masks which avoid the over correction in certain two color mixtures are described. This method is related to the Type 3 mask in Article 7 of the series by the author on "Masking for Color Correction." In U. S. 2,183,525 J. A. C. Yule made his black negative by triple exposure of very high contrast positives from the three original separations and the contrast restored to normal in the resulting negative. The blue and green filter negatives may be masked when making the high contrast positives so that the black will be clean in the blues and greens as well as in the yellows and reds.

• COLOR CORRECTION PATENTS. Article 8. Frank Preucil. *National Lithographer* 56, No. 1, January, 1949, pp. 30-31, 89 (3 pages). In this article the author examines the patents of Alexander Murray, Arthur C. Hardy, John Yule, and M. Lucio Nerot. Hardy's photographic method of masking successively separately exposed negatives and positives to create the color printers is described. His preferred method of controlling these additive and substractive exposures was by a four cylindered electro-optical apparatus which scans the colored original. An improved black printer was suggested by Yule that used a monopack three emulsion type film or plate similar to Kodachrome to record a halftone image. Another novel method of making a black printer as well as a mask projection system are found in a French patent issued to M. Lucio Nerot in 1935. This method used a special camera which enabled color corrected positives to be made by contact from separations without interfering mask thickness. Another patented method if making contact color corrected positives in a camera is the "autographic" method of Murray. In this color correction process the filtered optical image of the original sketch takes the place of the projected mask image of Nerot's method.

• COLOR CORRECTION PATENTS. Frank Preucil. *National Lithographer* 56, No. 2, February, 1949, pp. 36-7 (2 pages). Some special patents on color correction are described. Features include (1) simultaneous processing of masks and separations, (2) use of the positives alone, without recourse to masks. A devise allowing quick visual observation of retouching is described.

• COLOR CORRECTION PATENTS, Article 10. Frank Preucil. *National Lithographer* 56, No. 3, March, 1949, pp. 34-35 (2 pages). This article continues the discussion of color correction patents, dealing with the patents of John Keenan using partial exposures through positive masks, Weaver's method of controlling the strength of the mask by converting it to a dye image, and the patents of Evans and Hanson using vectograph polarizing materials to control the strength of masks and vectodye filters.

• COLOR CORRECTION PATENTS. Frank Preucil. *National Lithographer* 56, No. 5, May, 1949, pp. 42-3 (2 pages). The author goes into detail on the Troland patent mentioned in the last article. He continues his discussion of other patents concerning color corrected separations including Hardy's of Internatonal Corporation, Carroll and Staud's of Eastman Kodak, Wilmann's of Ansco, and Gaspar's of Chromogen, Inc., British, French, and Italian patents. These patents cover the use of two or more photographic emulsions on the same base.

• COLOR CORRECTION PATENTS. Frank Preucil. *National Lithographer* 56, No. 4, April, 1949, pp. 32, 33 (2 pages). The author reviews the first series on "Masking for Color Correction" and the current series to date on "Color Correction Patents" for the benefit of those people who missed earlier installments. The first series is now available in booklet form. He notes the interest foreign countries are beginning to take in masking for color correction to replace color etching by hand. The next patent in the second series was introduced and will be discussed next month.

• A STREAMLINED SURVEY OF COLOR CORRECTION METHODS. Part I. Frank Preucil. *National Lithographer* 56, No. 6, June, 1949, pp. 42-43 (2 pages). This is the first section of a paper delivered before the TALI meeting in Chicago in April. In this survey, color correction methods are divided into three main groups; masking, special copy preparation, and electro-optical scanning methods. Masking methods are taken up in this first section.

Color—general

COLOR-TEMPERATURE INDICATOR. *Instruments* 21, No. 12, December, 1948, p. 1121. New "Spectra" direct-reading color-temperature meter eliminates a common cause of bad results in color photography by eliminating guesswork in determination of color of light (on standard color-temperature scale) from continuous-spectrum sources. It embodies a photocell and a direct-deflection indicator, thus obviating need of peering through colored-glass wedges. Range 2000 to 30,000° K. (from candle-light to most intense blue sky). Instrument comes with tables telling what filter and filter factor to use. Photo Research Corporation, 15024 Devonshire Street, San Fernando, California.

COLOR FACSIMILE. Arthur C. Hardy and Edward C. Dench, assignors to Interchemical Corporation. *United States Patent No. 2,434,561* (January 13, 1948). In the method of making corrected color-separation images for reproduction of a colored original by superimposed prints from structured printing plates in which electric signals representing different spectral components of the colored original are modified by one another, the new step which consists in utilizing the color stimuli of overprint combinations of the reproduction inks to control the extent of such modification. *Official Gazette* 606, No. 2, January 13, 1948, p. 333.

NEW COLOR INSTRUMENT. *American Ink Maker* 27, No. 4, April, 1949, p. 59. A simple device for integrating sources of illumination to aid in color matching was recently developed by Photo Research Corporation. Operating on a photo-electric principle, the instrument measures the color temperature of light sources. The instrument indicates the ratio of blue light to red light in degrees Kelvin.

Color photography—general

• COLOR PROOFS BEFORE ETCHING. Harvey T. Holsapple. *Photo-Engravers Bulletin* 37, No. 4, November, 1947, pp. 72-75 (4 pa$_{i_3}$es). A brief discussion of the Potter-Cushing-Pitman method of quick color proofing before etching, for photo-engravers. The camera operator, while making his screen negatives, shoots a set of "high" negatives on stripping film. These strip film negatives are developed and fixed in the usual manner and then placed in a reversal solution for a few minutes, rinsed, and then placed in separate dye baths for those colors for which the job calls. After dying, the prints are stripped to register on a white paper support.

• THE THREE-WAY PROCESS. J. S. Mertle. *National Lithographer* 55, No. 6, June, 1948, pp. 34, 35 (2 pages). The three way or the indirect process is a method of producing some forms of color work cheaper. Progress in photography has brought this about by the various methods of masking separate negatives for correction and special photographic materials on which to make the positives. The only thing new in the three way process is the use of modern photo paper.

• COLOR SEPARATIONS BY FILTERED LIGHT. *Modern Lithography* 16, No. 9, September, 1948, pp. 50, 131 (2 pages). A method of making high quality color separation continuous tone negatives by use of filtered fluorescent light sources instead of through filters in the camera was announced and demonstrated by William C. Stone of Copifyer Lithograph Corporation at the August Craftmen's Convention in Cleveland. The basis of the process is the use of two 40 watt fluorescent tubes as light sources, one on each side of the copy. Colored gelatin filter sheets are wrapped around the tubes to provide the proper colored light. The

lamps and filters required are listed.

TRICOLOR SEPARATION NEGATIVES. D. St. Clair. *Photo. Age* 2: 4-7, 18-19, June, 1947. Instructions are given for the making of direct and indirect three-color separation negatives. For making indirect separation negatives from color transparencies, the sharp-cutting F, N, and C4 filters are suggested, and contact exposures are made to avoid possible lateral color aberration from the enlarger lens. Ansco Isopan Plates and Wratten Tricolor Plates are used because they have normal contrast and a relatively long straight-line portion of the characteristic curve. (Abstractor's Note: Wratten Tricolor Plates were replaced by Kodak Tri-X Pan Type B Plates in 1941.) Gray-scale densities are best plotted individually for each set of working conditions. Film is more readily available, easily handled, and resistant to damage than plates. On the other hand, glass plates offer better registration and are better adapted to masking. A step wedge should be included in every picture for comparing the densities of the three negatives. The Eastman Gray Scale is said to be satisfactory in a commercial setup, but for outdoor scenes, larger scales which can be made from photographic paper are preferred. Several tables of filter factors and developing times for separation negatives are included, based on the use of Ansco Isopan Plates, developed in a tray, and agitated for 30 rocks per minute in Ansco 17 at 68° F. Accurate reading of gray-scale densities is essential for obtaining balanced negatives, and a densitometer or comparison calculator, such as the Kodak Densiguide, may be employed for this purpose. In certain cases, negatives may be matched visually. *Monthly Abstract Bulletin, Kodak Research Laboratories* 34, No. 6, June, 1948, p. 233.

* OFFSET COLOR SEPARATION. Andrew Balika. *Share Your Knowledge Review* 30, No. 2, November, 1948, pp. 29-38 (10 pages). The use of colored flourescent tubes in making color separation negatives at the Copifyer Corporation is described. The details of equipment and procedures are outlined along with an evaluation of the benefits in the use of the flourescent copyboard lighting.

PREVENTION OF MOLDS IN COLOR PHOTOGRAPHY DYE SOLUTIONS. Fred S. Beal. *J. Biol. Phot. Assoc.* 16, 131 (1948). To prevent mold growth in dye solutions used in color photography, E. E. Ecker recommends adding a small "pinch" of phenylmercuric chloride, $PhHgOHPhHgCl$. Solutions of Kodak Matrix Dyes keep nearly a year at room temperature without sign of mold and the addition does not affect the working of the dyes in any way. *Chemical Abstracts* 42, No. 12, June 20, 1948, p. 4075.

* THE KEMART COLOR SEPARATION METHOD. Harvey T. Holsapple. *Graphic Arts* Monthly 21, No. 3, March, 1949, pp. 66, 68, 70, 72 (4 pages). The use of Kemart flourescent materials for highlighting of color plates is described. The material can be placed directly on the original or on an overlay sheet.

* PRACTICAL COLOR SEPARATION PHOTOGRAPHY. Melvin Gevert. *Lithographers Journal* 34, No. 2, May, 1949, pp. 10, 49 (2 pages). The author has given the general rules to follow in practical color separation photography. He cites the necessity of making adjustments in the filters in order to register the original colors in proper value. The three main classes of methods of color reproduction, and the types of separations to use of various types of originals are discussed.

* PRACTICAL COLOR SEPARATION PHOTOGRAPHY. Melvin Gevert. *Lithographers Journal* 34, No. 3, June, 1949, pp. 8, 9, 49 (3 pages). This is the second part of an article begun in the May *Lithographers Journal*. The author

discusses the making of the separation negatives, the preparation and correction of masks, and concludes with the Kodak Fluorescence Process.

Masking methods

• MASKING. Frank Preucil. *National Lithographer* 55, No. 5, May, 1948, pp. 42-3, 92-93 (4 pages). Negative masks and their various uses are described. They have found increased popularity in recent years through their suitability for use with color transparencies and for the preparation of integrally corrected separations to be used with contact screens where intervening mask thickness would be undesirable. With Kodachromes, negative tone correction masks are invaluable in reducing the usually excessive contrast to a brightness range which can be accommodated on the straight line portion of the separation's emulsion. The difference in principles involved in the use of negative and positive masks is discussed. Negative masks eliminate colors by working backwards. Instead of acting on them directly, the negative mask adds density to the white in the positive image until it matches the unwanted colors effective photographic density to the selected filter.

IMPROVEMENTS IN LINE AND HALFTONE PHOTOGRAPHIC REPRODUCTION: UNSHARP MASKING TECHNIQUE FOR LINE SUBJECTS USING FILM COATED ON BOTH SIDES. *British Patent 599,392* (March 11, 1948). J. A. C. Yule, assignor to Kodak Limited. This patent deals with originals which have only two tones, that is, black and white. Such subjects are line drawing and halftone prints Practical trials show that fine light detail on a dark ground and fine dark detail on a light ground may need for their proper rendering exposures varying in the ratio of possibly four to one. The unsharp masking process will cure this state of affairs provided that (a) the masking factor is suitable and that (b) the unsharpness is such that the fine details are not resolved by the mask. The patent describes a special base coated on one side with a blue sensitive emulsion of high contrast and on the back or mask side a slow red sensitive emulsion. In use the "work" side is exposed first in the normal manner, the bipack partially developed and another exposure is made through the partially developed image onto the red sensitive layer, using red light. Final development of the "work" side and development of the mask are now carried out simultaneously. *British Journal of Photography* XVC, No. 4604, August 13, 1948, page 333.

• MAGENTA COLOR MASKING. Martin Helpher. *Process Engravers' Monthly* 55, No. 657, September, 1948, pp. 268-9 (2 pages). Discussion of the Eastman magenta method of color masking, with complete details of the procedure, and formulas for the alkaline stop bath and the magenta bleach.

• MASKING PATENT FOR BLACK AND WHITE WORK. *Process Engravers' Monthly* 55, No. 657, September, 1948, p. 288 (1 page). Review of British Patent 599,392, granted to Kodak Ltd., assignee of J. A. C. Yule, on the application of the unsharp process to black and white subjects.

• GIVE MASKING A GOOD START. *Bulletin for the Graphic Arts,* Eastman Kodak Company, No. 11, 1948, pp. 3-5 (3 pages). Photographic masking methods increase production capacity and quality and allow the dot etcher to utilize his skill to the utmost. A method is given for introducing masking into a production plant. Once it is tried, its advantages will be so apparent that it will automatically install itself.

• THE MASKING METHOD OF COLOR REPRODUCTION. Part 4. *Bulletin for the Graphic Arts,* East-

man Kodak Company, No. 11, 1948, pp. 5-7 (3 pages). Masking has three objectives: (1) to reduce the overall contrast range of the original, (2) to correct tones that will be weakened in reproduction, (3) color correction by taking excess magenta from greens and blue-greens, and excess yellow from blues, violets, and reds. Color proving should be used to indicate the dot etcher's and cameraman's success.

PHOTOGRAPHIC TONE CORRECTING MASK. P. K. Clasoe, assignor to Kodak Ltd. and Eastman Kodak Company. *British Patent Number 595,149* (February 14, 1945). A tone correction mask of the type described in British Patent 570,498 is prepared by exposing the mask to the original transparency so that only the lower densities (0.6) are recorded. The mask is developed to a gamma between 1 and 4, and is bleached to reconvert the silver to silver halide. The mask is registered a second time with the transparency, but this time is exposed to record the full density scale by light of a select color, and developed to a gamma of 0.3 to 0.6. It is stated that the silver halide formed by bleaching of the first developed silver remains unexposed and hence undeveloped at this stage. The mask is fixed out and used for printing copies after registering a third time with the original transparency. The mask may be converted to a colored image before the final registration. *Photographic Abstracts*, Part 2, 1948, p. 117.

* COLOR CORRECTION BY MASKING FOR HIGH-SPEED ROTARY PRINTING WITH HEAT-SET INKS. Clyde A. Hunting. *PSA Journal* 15, No. 1, January, 1949, pp. 65-71 (7 Pages). A general discussion of the purposes and methods of masking, including a description of photomechanical reproduction. An equation is given to compute exposure time for any desired density range.

* THE MAGENTA MASKING METHOD. F. W. Coppin. *Penrose Annual*, 1949, Volume 43, p. 131 (1 page). Experiences with the Magenta Masking Method using materials available in England is reported. The results were quite successful.

* THE REPRODUCTION OF COLOR TRANSPARENCIES BY MAGENTA MASKING. Martin Hepher. *Process Engravers' Monthly* 56, No. 663, March, 1949, pp. 77, 78 (2 pages). This is the second article on the use of magenta masking in England. The author discusses contact contrast reducing masks on transparencies and the use of red and green filter magenta masks in the camera.

Typewriter photographic copy

* ALIGNS LINES WITH FIRST TYPING. *Printing Equipment Engineer* 76, No. 4, July, 1948, p. 74. The Vogel-Reel provides a method of producing typewritten copy with margins aligned automatically in the first typing. This machine utilizes the present typewriter tabular key as a justifier and adds a reel of special paper tape. Columns of various widths can be set. Lines in which an error is discovered before completion can be torn off and typed over. Joseph Spielvogel, Newark, N. J.—Inventor.

General

• OFFSET HAZARDS. Joseph Winterburg. *Photo-Engravers Bulletin* 37, No. 10, May, 1948, pp. 11-18 (8 pages). Some of the troubles are discussed which may be encountered in graining, counter-etching, coating a plate, and inking, developing, and etching the plate. The effect of fountain solution pH and variation in inks is mentioned. The steps in deep-etch platemaking are outlined. The effect of an increase of relative humidity on the exposure time for offset plates and cold top enamel is explained.

CELLULOSE ESTER LITHOGRAPHIC PRINTING PROCESS. Ralph S. Colt, assignor to Eastman Kodak Company. *United States Patent No. 2,448,861* (September 7, 1948). The method of forming a design in a cellulosic sheet for printing purposes, which comprises impregnating a hydrolyzed surface layer of a surface hydrolyzed cellulose organic acid ester sheet with ammonium bichromate, exposing said surface to light under a design and selectively removing a portion of the exposed hydrolyzed surface with a solution selected from the class consisting of water-soluble chlorites and water-soluble hypochlorites. *Official Gazette* 614, No. 1, September 7, 1948, p. 225.

• SLURS AND STREAKS. *American Pressman* 58, No. 8, July, 1948, p. 17 (1 page). The major types of slurs and streaks are as follows: slurs and streaks due to rollers; slurs due to condition of paper; slurs and streaks due to improper surface travel. The causes of each type of slur and streak are discussed with possible remedies suggested.

PROCESS FOR THE PRODUCTION OF PRINT PICTURES ON PRINT BODIES. Egon Herbert Schwarz. *United States Patent No. 2,437,005* (March 2, 1948). A method of producing print pictures on metallic printing surfaces comprising the steps of treating the metallic surface on which the picture is to be produced with a lye, applying to the surface a layer of sensitized emulsion, copying the desired picture on the sensitized surface, developing the picture, and coating the surface carrying the picture with a solution containing a salt of a metal the position of which in the displacement series is below that of the metal of the printing surface, said metal salt being capable of forming an ink receptive metal deposit. *Official Gazette* 608, No. 1, March 2, 1948, p. 137.

• NOTE ON COLD TOP ENAMEL. E. E. Loening. *Share Your Knowledge Review* 30, No. 4, January, 1949, pp. 34-36 (3 pages). The problem of the production of a really reliable cold top enamel of consistent properties is still far from its final solution. However, an account by P. C. Smothurst in the *Process Engravers Monthly* of work on cold top enamel during the early part of the war is reviewed as a possible basis for further research. Products used in these experiments were hard and soft lac resins. However neither alcoholic or aqueous solutions of resins provided required results. The obvious step, therefore, in order to produce a suitable resin solution is to submit the resin to a controlled hydrolysis until a suitable degree of solubility in alcohol is obtained. The procedure of hydrolysis is explained.

POLYVINYL ALCOHOL DIAZO LAYERS. J. Albrecht. *German Patent Application No. 258,500; P.B. 84,480*, fr. 1134-9; *Ansco Abstracts* 1948, 8, (10), 246. Diazo compounds cannot be used with gum arabic or shellac for making offset positives, but with polyvinyl they furnish layers of higher keeping quality than dichromate-polyvinyl alcohol. The photodecomposition products of the diazo compounds exert a hardening ef-

fect on the colloid. An example is the diazo derivative of tetrazo-2:2¹-diamino-1:1¹-diphenylamine. The exposed plates are developed with water followed by a 1% solution of mandelic acid. *Printing Abstracts* 4, No. 1, January, 1949, p. 23.

THE SENSITIVITY GUIDE. George W. Jorgensen and Michael H. Bruno. *Lithographic Technical Foundation Research Bulletin No. 15*, 1948, 40 pages, $1.00. A description of the theory and use of the LTF Sensitivity Guide, a device for measuring the sensitivity of plate coatings. There are at least 43 factors in platemaking which can vary and change results, and the measurement of each factor separately is an impossible task. The sensitivity guide measures the total effect of these changes with considerable accuracy. The guide is a series of calibrated, continuous tone gray scale steps which is shot onto a plate at the time the plate is exposed. Development produces a number of black steps and some gray ones. The last black step is the critical one, and it will shift if plate sensitivity changes.

* COUNTER - ETCHING. *Research Progress* No. 11, January-February, 1949, pp. 1, 4 (2 pages). A photomicrograph of a typical brush bristle against a grained zinc plate shows that the tip of the bristle covers several of the grain peaks. This means that the bristles are too large to enter the valleys of the grain, and merely ride over the grain peaks. A counter-etching technique is suggested, consisting first of cleaning the plates under water with cotton or molleton. Then counter-etch is flowed over the plate and the plate rocked back and forth for about a minute, with no rubbing. Finally the plate is flushed with water and rubbed with cotton or molleton to remove any material loosened by the counter-etch. At no time is a bristle brush used during the counter-etching.

REPELLENT SOLUTIONS FOR PLANOGRAPHIC PRINTING. Addressograph - Multigraph Corporation. *British Patent No. 600,817; Photographic Abstracts* 1948, 28 (IV), 220. Various formulations of solutions for dampening and etching planographic printing plates are claimed. They are characterized by the fact that they all contain a glycol and a water-soluble aldehyde. This combination restrains the undesirable effect of the glycol in making the blankets tacky. A typical solution is made up of mono-ammonium acid phosphate (4.5 g.) ammonium nitrate (0.75 g.), nickelous nitrate hexahydrate (2.25 g.) formalin (1.00 g.) diethylene glycol (20.0 g.) and water (71.5 g.). It has also been found possible to use invert sugars in place of the glycols. *Printing Abstracts* 4, No. 3, March, 1949, p. 113.

Plate desitometry

* PLATE COATING SENSITIVITY. George W. Jorgenson and M. H. Bruno. *Lithographers' Journal* 33, No. 5, August, 1948, pp. 9, 10 (2 pages). Coating thickness, coating pH, relative humidity, dark reaction, and continuing reaction are the five main factors affecting plate coating sensitivity. Each of these, in turn, is affected by a number of lesser factors. The LTF Sensitivity Guide provides a means of measurement or judgment which will sum up or integrate the effects of these factors and permit the control and standardization of platemaking.

Planographic printing surfaces—general

PROTECTING SURFACE FOR A STEEL LITHOGRAPHIC PLATE. Charles H. Van Dusen, assignor to Addressograph-Multigraph Corporation. *United States Patent No. 2,441,653*. A thin and normally substantially flat and non-curling flexible steel planographic printing plate having a mechanically grained image-receptive surface on at least one face thereof, said image-receptive surface having thereon a rust-inhibitive coating comprising sodium chrome glucosate and which is substan-

tially free of any tendency to interfere with the image-reception or image-reproduction characteristics of said grained image-receptive surface. *Official Gazette* 610, No. 3, May 18, 1948, pp. 654-655 (2 pages).

INTRODUCING PVA. W. B. Hislop. *Process Engravers Monthly* 1948, 55 (649) 26 (Jan.). Formulae and technique are given for using polyvinyl alcohol as a light-sensitive coating. *Printing Abstracts* 3, No. 4, April, 1948, p. 174.

• CRONAK — HIGH CONTRAST COATINGS AND MUCH SHARPER IMAGES. George W. Jorgensen and Julia A. Jones. *National Lithographer* 55, No. 6, June, 1948, pp. 38, 39, 108, 109 (4 pages); *Lithographers' Journal* 33, No. 3, June, 1948, pp. 8-9 (2 pages). Lithographic Technical Foundation has found that Cronak gives higher contrast and sharper images among its many other advantages. This article explains the need for higher contrast and discusses the factors affecting it. The work was done in connection with the LTF Sensitivity Guide which is pictured with the article to demonstrate the effects of Cronak on the contrast.

PHOTOGRAPHIC PROCESS OF PRODUCING A PRINTING IMAGE. Philip G. Filmer, assignor to General Motors Corporation. *United States Patent No. 2,446,915* (August 10, 1948). A method of producing a photographic printing image including coating of a transparent backing plate with an opaque lacquer, applying an identification coating of colored lacquer to the first coat of opaque lacquer applying a coating of light sensitive colloid to the lacquer, exposing the light sensitive coating to light rays under a master negative and developing to remove the colloid from the light affected areas over the lacquer, removing the lacquer over the area where the colloid is removed by dissolving with a lacquer solvent, and then removing the remaining colloid with water. *Official Gazette* 613, No. 2, August 10, 1948, p. 459.

• A NEW METHOD FOR MAKING OFFSET PLATES. Kenneth W. Martin. *Lithographers' Journal* 33, No. 7, October, 1948, p. 27 (1 page). A description of a new type of printing plate developed in the laboratories of the Harold M. Pitman Company. The metal is first insulated by a plating process to prevent reaction with the photographic emulsion and to make the surface porous and water receptive. It is then coated with a slow contact type of silver emulsion. Exposure is made through a negative, using a No. 1 Photoflood at 7 feet. The plates are developed with a contrast developer, washed but not fixed. A special reversing solution dissolves the silver image and exposes bare metal in the image areas. Subsequent operations are similar to those used in deep-etch platemaking. The plate is coated with lacquer, the developing ink, and the stencil is removed with a special solution. Then the plate is gummed with a non-chromic plate etch.

TREATED PLANOGRAPHIC PRINTING PLATE. Charles H. Van Dusen, Jr., assignor to Addressograph-Multigraph Corporation. *United States Patent Number 2,448,749* (September 7, 1948). A paper planographic printing plate impregnated with 2 amino, 2 methyl, 1, 3 propanediol. *Official Gazette* 614, Number 1, September 7, 1948, p. 198.

• THE DURABIE OFFSET PLATE (In German). *Deutscher Drucker,* January, 1940, p. 126 (1 page). In its issues of December, 1936, and 1937, the "Deutscher Drucker" reported about a bimetallic copper-stainless steel plate from which as a rule 300,000 impressions could be made on a web press. The thin copper layer, electroplated on to a completely smooth steel plate, carries the light-sensitive coating. After

development and etching, the copper that remains carries the printing image, while the non-printing areas are on steel. Steel needs very little water in order to repel ink and does not tend to scum or tint. The print quality is good and even inferior papers can be used with good results. The Efha-Rasterwerk introduces now the *Efhanol-Stahlkopie*. The image is put on the plate by the deep-etch process and a stainless steel layer is electroplated on to the non-printing areas. This results in a saving of steel. A sample illustration demonstrates the good printing quality of these plates. Due to the hardness of the steel layer large runs are possible and the plate also exhibits sharpness of dots due to the fact that graining is not necessary.

LITHOGRAPHIC PLATEMAKING (In German). Book by Hanns Eggen. Carl Garte Verlag, Einbeck, Hannover, Germany, 1948, 128 pages. This book gives a rather complete survey of platemaking processes used in Germany at present. Though originally designed as text for apprentices, its contents should make it of interest to American plate makers. An introduction explains the fundamentals of platemaking and instructions as to proper graining are given. Then methods of surface coating and deep-etch platemaking are covered extensively. Problems for apprentices appear throughout the work. Other chapters include preparation of the copy not using the camera, stripping, instructions as to how to reproduce different types of originals satisfactorily, photo typsetting, photo-composing, and the development of the bimetallic plate. Odd processes as lithography without water and dry lithography from relief plates are also dealt with. Prospects for probable future developments in platemaking conclude the work.

• PLATEMAKING BY PROJECTION (In German). *Deutscher Drucker* 46, No. 9, June, 1940, pp. 343, 344 (2 pages). The development of platemaking by projection is covered. Of the new methods, the "Beka-Plakat-Verfahren fuer Offset" of Robert Kaulen had not been used too much due to a shortage of materials, while Hausleiter's "Projektions kopie" is now being put into practice. Fifty-four or sixty to seventy-line positives were blown up to about 20 lines on the plates. The "Projektions kopie" has many advantages. There is almost no shift in tone values, and the magnification possible is from 2-½ times upwards almost limitless. Details are given for projection arrangement and the fastening of the metal plate for projection. The plate is counteretched using a special solution, coated with an anti-halation backing, and a coating applied containing halogen silver. Exposure is ½ to 2 minutes and developing can be done by bright yellow light. A special hardening developer is applied, the image washed out with hot water, dyed, further developed if necessary, and dried. The further treatment is the same as with the "Efha-Positiv-Kopie" as this is a further development of this deep-etch process.

• A METHOD OF REMOVING WORK FROM PLATE AREAS. Norman A. Mack. *Modern Lithography* 16, No. 12, December, 1948, pp. 38-39 (2 pages). The air eraser can be used for removing register marks and other unwanted work areas of a deep-etch plate. Staging-out can be eliminated, and much time saved. The eraser can also be used for fading out a vignette, or lightening a heavy shadow. An area of the plate can be cleaned and regrained with the eraser to hold set-in work on a deep-etch plate. Moisture must be eliminated from the air line supplying the eraser, and a tank type

air compressor used to supply air to the eraser.

LITHOGRAPHIC PRINTING PLATE. W. G. Mullen. *United States Patent 2,444,205.* A lithographic printing plate is disclosed which comprises a water-resistant base sheet having superimposed on it a casein-resin primer, a layer of pigmented casein, a layer of a mixture of water-soluble and water-insoluble polyvinyl alcohol, and an outer layer of polyvinyl alcohol and casein. The top three layers are sensitized with bichromate. *Monthly Abstract Bulletin* 34, No. 11, November, 1948, p. 498.

PLANOGRAPHIC PRINTING PLATES. W. C. Toland and E. Bassist. *British Patent 577,832* (December 8, 1942). A coated paper to be further coated with a light sensitive material for use as planographic printing plate. Kraft, parchment or fiberboard is coated with a urea-formaldehyde resin containing hardener such as hexamethylene tetramine, then with an aqueous collodial suspension such as polyvinyl alcohol, gelatin, albumen. Combination is water-receptive with the resin partially dry, and is water repellent and firmly bonded when completely dry. *Abridgement of Specifications, British Patent Office,* Group XX, Series 560,001 to 580,000, p. 307.

PRESERVATIVE FOR PHOTOLITHOGRAPHIC PLATES. Edmund D. Osinski and George W. Bucklin. *United States Patent No. 2,463,554* (March 8, 1949). A composition for preserving paper photolithographic plates consisting of the ingredients and proportions as follows: 8 ounces of gum acacia, 1 ounce of potassium alum, 1 ounce of sodium sulphite and sufficient water to make on quart of solution. *Official Gazette* 620, No. 2, March 8, 1949, p. 491.

* THE GRAIN OF THE OFFSET PLATE. Henry A. Beechem. *Graphic Arts Monthly* 21, No. 2, February, 1949, pp. 80, 82 (2 pages). Capillary action is stressed as an important action in the degree a plate holds water. Absorption of water is a still more important action in the process of a grain holding water. Absorption is physical while adsorption is chemical. Adsorption is not rapid but takes place slowly. The other function of the grain is to anchor the image coating to the plate. The image remains rough. Without such roughness the plate would not take ink.

* CRONAK SURFACE TREATMENT FOR ZINC. Michael H. Bruno and Paul J. Hartsuch. *Canadian Printer and Publisher* 58, No. 3, March, 1949, pp. 40, 50 (2 pages). The Cronak surface treatment for zinc plates is explained. Its advantages are: (1) plates develop out easier, (2) images are firmer, (3) images are sharper, (4) plates do not oxidize even under abnormal conditions, (5) less water is required on the press.

* HI-SPEED PROCESSING PLATE. Robert C. Russell. *National Lithographer* 56, No. 5, May, 1949, pp. 40, 60 (2 pages). A description of a pre-sensitized litho plate which decreases platemaking steps to two — exposing and gumming. The plate consists of a cellulose acetate film provided with a saponified surface film which is water receptive. A light sensitive diazo compound is incorporated in the surface film. On exposure, the diazo compound is converted into an ink receptive material for the image areas. The gumming operation removes the unexposed soluble diazo compound, and protects the non-image portions of the plate. With an arc light, exposure can be completed in 30 seconds or less, and a complete plate can be made within 3 minutes.

* A NEW LITHO PLATE. *British and Colonial Printer* 144, No. 1066, April 8, 1949, p. 264 (1 page). Algraphy Limited, of London and Leeds, have introduced an anodized aluminum litho plate called "Alcoat." The plates are given a very fine grain preceding anodizing. Nitric or sulfuric acid is used as a counter-etch. A somewhat higher Baumé than normal is needed when an albumin coating is used. For deep-etch plates a saturated iron perchloride (ferric chloride) solution is used as a deep-etching solution. Fine

(200-line) halftones can be printed on the new plate. The plates are highly desensitized, and only gum is used in the fountain solution. Very little dampening water is needed. It is possible either to add new work or to make deletions.

* CONTACT ANGLES — WHAT THEY ARE AND WHAT THEY MEAN. G. N. Martin. *National Lithographer* 56, No. 4, April, 1949, pp. 26-27 (2 pages); *Modern Lithography* 17, No. 4, April, 1949, pp. 37-38 (2 pages). The application of wettability measurements as obtained by contact angle measurements to the study of the lithographic properties of metals is described. Some contact angle values are given to show the effect of alkali rinse, pre-etching, and surface treatments such as Cronak, on the wettability of albumin type litho plates. Good correlation between these values and press results has been obtained.

PROCESS FOR THE MAKING OF PRINTING PLATES. Kalle & Co. *French Patent No. 904,255.* A process for making zinc or aluminum printing plates using light sensitive diazo compounds without the addition of colloids.

PRINTING SURFACES. O. Boll. *British Patent No. 582,580* (May 4, 1944) In a method of producing printing plates for use in photolithography, photoengraving and similar processes, a sheet of backing material of a non-metallic nature such as an artificial resin, paper, cardboard or fabric is grained or rendered matt by sand-blasting or scouring, and a metallic layer consisting of a metal other than chromium is applied thereto by spraying or by electro-deposition. The applied metal surface is smoothed by placing the plate in a shaking frame and subjecting the surface to the action of sand and water, with the aid of pebbles, marbles or the like, if necessary. The metallic layer may be of zinc, copper, aluminum, or bronze. The backing material may be rendered waterproof by the application of an oily material or an artificial resin. *Abridgement of Specifications*, Group XVI, page 21.

* SUMMER TIME IS TROUBLE TIME. Joseph H. Winterburg. *National Lithographer* 56, No. 6, June, 1949, pp. 36-37, 120 (3 pages). Most chemicals used in platemaking are more active when the temperature and the humidity increase in summer. The counter-etch is more active, and it may be possible to dilute it. High humidity gives a thinner coating on the plates unless the whirler speed is changed. Coatings are more sensitive to light at high relative humidity, and the exposure should be decreased to allow this. Pre-etching is helpful in summer weather. High humidity increases the possibility of plate oxidation. Plates should be well protected and kept as dry as possible. Finally, developing ink and gum solutions do not dry as rapidly when the humidity is high.

* TIPS ON PLATEMAKING. Charles Work. *National Lithographer* 56, No. 6, June, 1949, pp. 44 (1 page). Steps are outlined for the gumming and washing out of a plate so as to avoid gum streaks. It is important to have plenty of ink on the image areas and then powder the ink with rosin before gumming up.

* OM YTSPANNINGEN MELLAN FUKTVATTEN OCH LITOGRAFISK FERNISSA (In Swedish). G. E. Carlsson & S. Weige. *Grafiska Forskningslaboratoriet Meddelande*, 1949, No. 19 pp. 6-18 (January). An investigation has been carried out on the effect of the pH and the concentration of some salts and gum arabic in aqueous solution on the surface tension between the solution and a lithographic varnish. The surface tension was determined by measuring the contact angle of a drop of the aqueous solution on a film of varnish. It was observed that the contact angle varied to a certain extent with the pH and decreased considerably when the pH rose above 5. The highest surface tension existed at a pH-value between 3 and 4. The surface tension also decreased in some degree with increasing concentration of dissolved substance in the solution. It was further observed that the influence of chromic acid on the surface tension is not greater than that corresponding to its effect on the pH of the solution and also that alum has no unfavorable effect on the surface ten-

sion. *Printing Abstracts* 4, No. 5, May, 1949, p. 211.

* HOW MUCH DO PLATE MAKE-OVERS COST? Paul W. Dorst. *American Printer* 128, No. 6, June, 1949, pp. 43, 45 (2 pages). The cost of plate make-overs is much more than the cost of making the plate itself, and involves press delays, upset schedules, and lost production time. In one plant, the total loss was estimated to be $36,000 a year. This was largely eliminated by careful analysis of each plate failure, improvement in platemaking techniques, and cooperation between the different departments. Some of the plate failures were due to faulty gumming, poor counter-etching, uncontrolled plate exposure, failure to make changes to allow for changes in relative humidity, use of felt in developing plates, and improper application of developer and deep-etching solutions.

Albumin plates

* EXPOSURE VS COATING THICKNESS. Don Grant. *Harris Impressions* 8, No. 2, March-April, 1948, pp. 1, 3 (2 pages). Suggested procedures for coating surface type plates so that exposure may be kept constant under varying conditions of relative humidity. Charts are given as guides to control coating thickness by (1) speed of coater, (2) time of heat during coating, and (3) per cent of water added to the coating solution. The charts are based on a maximum time of ten minutes between coating and exposing.

* THE MAIN REQUIREMENTS FOR GOOD ALBUMIN PLATES. Harold Ellis. *Modern Lithography* 16, No. 7, July, 1948, pp. 65, 109 (2 pages); *Lithographers' Journal* 33, No. 4, July, 1948, p. 8 (1 page). Precautions are given for each of the steps in albumin platemaking.

* WOOL FELT AND THE IMAGE. Charles F. King. *Inland Printer* 122, No. 2, November, 1948, pp. 51-53 (3 pages). The use of wool felt in the development of a direct contact albumin plate is deplored. But it may be necessary in the development of projection plates, which, due to longer exposure, have partially hardened albumin in the non-image areas. Poor negatives which have dots with fringes will give the platemaker trouble. With a good hard dot negative, the variables which affect plate sensitivity such as relative humidity, and coating thickness are much less critical. The use of Cronaked zinc plates and Brunaked aluminum plates was mentioned as an aid to getting sharper images and avoiding the use of wool felt. Recent developments have improved the performance of albumin plates. These include contact screens, high contrast films and developers, integrating light meters, Cronak and Brunak, the LTF Sensitivity Guide, and air conditioning.

* CONCENTRATED EGG ALBUMEN. Henry A. Beechem. *Graphic Arts Monthly* 21, No. 2, February, 1949, pp. 84, 86, 88 (3 pages). A recommended procedure is given for increasing the shelf life of concentrated egg albumen solutions. The breakdown of concentrated solutions of egg albumen is due to conversion of the soluble proteins into insoluble material by the enzymes catalase and lipase. These enzymes are not very sensitive to alkalinity and can withstand freezing and most bactericides. They are susceptible to high acid concentrations and to $CuSO_4$, which latter is destructive to albumen. Heating between 140° F. and 158° F. for 10-30 minutes destroys them. (Albumen begins to coagulate at 160° F.) Such treatment should be accompanied by filtration and addition of chemical preservative.

* REMOVAL OF RESIDUAL ALBUMIN. Karl Davis Robinson. *American Printer* 128, No. 4, April, 1949, pp. 47-49 (3 pages). This is a report on a paper presented by Dr. Paul J. Hartsuch of the Lithographic Technical Foundation at the meeting of the Technical Association of the Lithographic Industry, April

12-13. It has been proved that albumin plates, as usually made, have a thin film of "residual albumin" on the non-image areas of the plate. Desensitizing etches do not adhere well to such a film, and the plates are not desensitized well. Tests are described for determining the amount of this residual albumin film. Relative advantages of various combinations of pre-etching, pre- and post-Cronak and Brunak for removal of this residual albumin are discussed. Pre-etching and treatment with ammonia after development will remove some of the residual albumin. However, the post-Cronak treatment on zinc and the post-Brunak treatment on aluminum have been proved the most effective. It is pointed out that there is no advantage to be gained by the use of post-Cronak or post-Brunak on deep-etch plates.

Deep etch plates

LIGHT-SENSITIVE LAYER. F. H. Hausleiter. *French Patent 899,553.* (November 10, 1943). A light-sensitive layer for photomechanical purposes comprises gum arabic sensitized with bichromate and containing an additional material, e.g., chrome alum, chromic acid, or formol, which hardens the colloid and converts it into a state in which it is insoluble in water. *Monthly Abstract Bulletin,* Kodak Research Laboratories 34, No. 3, March, 1948, p. 119.

* EXPERIENCE OF "PASSIVITY PROCESS" FOR ZINC PLATES William T. Holland. *Modern Lithographer and Offset Printer* 45, No. 3, March 1949, pp. 45-6 (2 pages). Excellent results have been obtained with "passivated" zinc plates (such as Cronak). The plates develop out easily even at high relative humidity. The amount of dampening water on the press is decreased, as is the ink drying time. The bichromated-gum treatment works very well with such passivated plates.

* REPORT ON COATES DEEP-ETCH BI-METAL PLATE. *Modern Lithographer and Offset Printer* 45, No. 3, March, 1949, pp. 46-47 (2 pages). A brief review of the Coates Brothers' bimetal plate (chromium on copper). This plate is similar to the IPI plate except that the base metal is copper, with chromium plated over the copper. It is claimed that the final cost of a Coates bi-metal plate equals that of a zinc deep-etch plate at runs of 200,000, and is cheaper than a zinc plate for runs of over 200,000.

* PREPARING ZINC PLATES. Henry A. Beechem. *Graphic Arts Monthly* 21, No. 5, May, 1949, pp. 74, 76, 78 (3 pages). Counter-etching and pre-etching of zinc plates are discussed. Formulas are given for citric, acetic, hydrochloric, glycollic, and sulphamic acid counter-etches. Hydrochloric acid must be used if the metal is covered with sulfide oxidation. The acids will not remove greasy substances from a plate. Such material can be removed with a trisodium phosphate, sodium tripolyphosphate or tetrasodium pyrophosphate solution. A counter-etch is recommended whether a pre-etch is used or not. In addition, a pre-etch (on surface coated plates) helps to reduce scumming. Agum arabic-tannic acid-chrome alum-phosphoric acid pre-etch solution is recommended.

Bimetallic plates

* BI-METALLIC PLATES (Part 10). J. S. Mertle. *National Lithographer* 55, No. 5, May, 1948, pp. 44, 45, 94, 95 (4 pages). Last article of a series on review of efforts to produce finer litho plates with various metals and processes. Latest developments considered here include Boeckelmann-Elfers patent pertaining to a smooth copper baseplate surfaced with a coating of nickel; Duroprint process of the Swiss concern Akomfina; work on bimetallic plates by "Time-Life"; development of Coates Brothers, similar to IPI plate. The entire series on bimetallic plates is summarized.

• BI-METALLIC PLATES BY THE ALLER PROCESS. PART II. A. Southway. *Modern Lithographer and Offset Printer* XLIV, No. 5, May, 1948, pp. 100-102 (3 pages). The method for the preparation of an Aller bi-metallic plate is described briefly. Points which Elton (*Modern Lithography*, January, 1948) enumerated which should be considered when choosing a bi-metallic plate process are answered one by one, as related to the Aller process. It is claimed that it is not true that a deep-etch plate will transfer more ink to paper. The limiting factor is how much ink the blanket will transfer from the plate to the paper. It is claimed that the Aller plate, with slightly raised copper image areas, seems to carry more ink than a deep-etch plate because the dot is more receptive to ink over the entire area of the dot.

• NEW LITHO PLATES. Henry P. Korn. *Modern Lithography* XVI, No. 6, June, 1948, pp. 35-37 (3 pages). It is pointed out that bimetallic plates are not new, but that lithographers have recently showed renewed interest in them as a means of producing a long life plate, reducing corrosion, holding the image better and reducing the amount of fountain water needed. An interesting chart shows data on seven modern bimetallic plate processes. The chart lists the base metal, ink receptive metal, water receptive metal, equipment necessary for processing the plate, whether a negative or positive is used, advantages of the process, discussion of method of producing the plate, and where to obtain further information on the process. The processes listed include Ahlen and Akerlund (Sweden), A. B. Printing Equipment Co. (Sweden), Aller (Denmark), Coates (England), Electron (USA), IPI Tri-metal (USA) and Time-Life (USA).

• BI-METALLIC PLATES AND HOW TO CLASSIFY THEM. *Lithographers' Journal* 33, No. 5, August, 1948, p. 11 (1 page). A system of classifying bi-metallic plates established at the Lithographic Technical Foundation is described. In general, bi-metallic plates fall into two types: (a) those in which the image is placed on one metal and a second metal is plated on afterwards in either the image or non-image areas; and (b) those in which one metal is plated on the base metal before platemaking, the top metal being etched off in either the printing or non-printing areas after the image is applied to the plate. These two broad types of bi-metallic plates may be classified further, depending on whether negatives or positives are used, thus providing 4 classifications, one of which most bi-metallic plates known at present will fit into. The Hausleiter Process, the Aller Process, the Alkuprint Process, and the IPI "Tri- Metallic" plate illustrate these 4 types.

• BIMETALLIC NICKEL PLATES. Sidney Blau. *National Lithographer* 55, No. 10, October, 1948, pp. 44-5 (2 pages). Discusses production of bimetallic plates with nickel at the non-image metal. Either a negative or a positive can be used. It is claimed that the nickel deposit is porous, and can be run with less water and higher pH fountain solution. The nickel can be plated onto a zinc, copper, or aluminum base to make a variety of bimetallic plates.

• BI-METALLIC PROCESSES. R. Adams. *Penrose Annual*, 1949, Volume 43, pp. 123-124 (2 pages). The procedures for producing three types of bi-metallic plates are briefly described. These are: Aller, Coates, Boekelmann and Elfers. General comments on bi-metallic plates are made.

• THE BI - METAL PLATE FOR OFFSET (In German). J. Roelofs. *Fachhefte* No. 1, 1949, pp. 10-20 (11 pages). The article giving a survey of bi-metal plates for offset is based on a treatise by Mr. C. A. H. Elton of PATRA, England, which appeared in the official publica-

tion of the Dutch Institute for Graphic Technique. Thirteen methods are mentioned which can be arranged into four groups. (1) Methods where a metal is precipitated in the image part of the plate by chemical means. (2) Methods where a metal is deposited electrolytically in the image part of the plate. (3) The image is produced by etching through an electrolytically deposited thin metal layer. (4) Other methods. The advantages, as well as the disadvantages of each method, are discussed and a way of evaluating any particular process leading to the production of a bi-metal plate is given by the author.

Plate desensitization

• PLATE DESENSITIZING PROPERTIES OF SILICA IN WATER. G. L. Riddell. *Modern Lithographer and Offset Printer* XLIV, No. 5, May, 1948, p. 105 (1 page). The desensitizing action of London tap water was found to be due to colloidal silica. A pronounced action was obtained when waterglass was added to water. Tests are now being conducted with colloidal silica added to press fountain solutions. Results of these tests are not yet available.

• RESIDUAL COATING AND DESENSITIZATION. P. J. Hartsuch and G. N. Martin. *National Lithographer* 55, No. 8, August, 1948, pp. 40, 41, 66, 68 (4 pages); *Modern Lithography* 16, No. 8, August, 1948, pp. 41, 43 (2 pages). Experimental work has demonstrated a residual film of gum remaining after the scrubbing off of a deep-etch stencil. This is an advantage because it improves desensitization. Several methods, including weighing, desensitization experiments, and contact angle measurements have shown that a residual film of albumin or casein remains on the non-image areas of a surface coated plate after development. This residual film however is responsible for scumming troubles. It was found that the residual film could be partly eliminated by the use of Cronak on zinc or Brunak on aluminum, by the pre-etching of the plates, and by the use of weak ammonia solution following development of the image. The film is almost completely removed if all of these methods are used. That is, Cronak or Brunak the plate, then pre-etch it, and after development of the image, wash the plate with a dilute ammonia solution. If the etch is dried on the plate, and followed by gumming, a highly desensitized surface coated plate results.

• STARCHES AS DESENSITIZERS.. *Graphic Arts Monthly* 20, No 11, November, 1948, pp. 58, 60 (2 pages). National Starch Products, Inc. have developed a modified starch called Clear Flo. It is the sodium salt of an ungelatinized starch acid-ester derivative containing carboxylic and sulfonic acid groups. This material has been tested as a desensitizing agent; it ranks between carboxymethylcellulose and gum arabic in desensitizing power. Further experiments with Clear Flo are contemplated.

• SOME COMMENTS ON THE DESENSITIZATION OF LITHOGRAPHIC PLATES. G. MacDougall. *Penrose Annual*, 1949, Volume 43, pp. 125-127 (3 pages). The importance of grain on zinc and aluminum plates is stressed. A method of determining surface roughness is described, as is a method of contact angle measurement of desensitization. Some values of contact angles on zinc and aluminum plates are given and the effect of gums is discussed. The effect of colloidal silica on aluminum is described.

Fountain solutions

• AN UNUSUAL CASE OF SCUMMING OF ZINC LITHO PLATES. G. MacDougall. *PATRA Journal* 11, No. 2, May, 1948, pp. 45, 46 (2 pages). Dissolved copper in the fountain solu-

tion was found to be the cause of the scumming of a zinc press plate. The copper was not present in the etch before it was put into the fountain. The etch contained nitric and chromic acids and other ingredients. This etch reacted with the brass of the water roller, and dissolved the copper. The solution of the problem was to use a fountain etch which did not react with the copper.

pH control

* PH—WHAT IT IS, WHERE TO USE IT, HOW TO CONTROL IT. Paul J. Hartsuch. *National Lithographer* 55, No. 9, September, 1948, pp. 42, 77, 78 (3 pages). The pH scale is explained. A pH of 7 is neutral, with higher pH values representing more and more alkaline solutions, and lower pH values more and more acid solutions. The difference between "immediate acidity" and "reserve acidity" is pointed out. The pH is a measure of immediate acidity. Acids are chemicals which supply H+ ions in a solution while bases supply OH— ions. Water itself supplies a very small amount both of H+ OH— ions. Four types of salts are discussed. Depending upon the composition of the salt, its water solution may be acid, neutral or alkaline.

CONTINUOUS MEASUREMENT AND CONTROL OF PH IN INDUSTRY. E. A. Murphy. *Southern Power and Ind.* 67, No. 2, 68-71, 136 (1949). The theory and practice of pH measurement and control are reviewed, and applications described for fungicide manufacture, paper manufacture, cane-juice liming and treatment of pickle liquor. A list of other applications is given. *Chemical Abstracts* 43, No. 5, March 10, 1949, p. 1881.

* PH MEASUREMENT IN LITHOGRAPHY. *Canadian Printer and Publisher* 58, No 3, March, 1949, pp. 44, 52 (2 pages); *Research Progress* 1, No. 8, July-August, 1948, pp. 1, 4 (2 pages). A brief explanation of the basic principles of pH meaning and measurement. References are given to more complete literature on the subject.

* PH RESPONSE OF GLASS ELECTRODES. George A. Perley. *Analytical Chemistry* 21, No. 5, May, 1949, pp. 559-562 (4 pages). The Leeds & Northrup Company has developed a new glass for pH measurements. It consists of lithium oxide-cesium oxide-barium oxide-lanthanum oxide and silica. Glass electrodes made of this glass respond rapidly to pH changes when buffered solutions are measured. They show a much lower sodium error than the Corning 015 glass in strongly alkaline solutions. Drying in air of the new type glass electrode does not affect the pH measurements as much as with the Corning 015 glass. With either type of electrodes, poorly buffered solutions must be agitated to give correct readings, and at least 5 minutes allowed for electrodes to come to equilibrium.

Plate grain

* PLATE GRAINING (4th Article). W. H. Grealey. *British and Colonial Printer* 142, No. 1014, April 9, 1948, p. 246 (1 page). The author mentions a number of troubles which might interfere with graining efficiency, and stresses the importance of using good materials. Remarks are made as to the types and sizes of graining marbles used, the influence of the time factor in graining, and the importance of a uniform surface to good printing.

Offset presses

* SELECTION AND CARE OF BLANKETS AND ROLLERS. Walter E. Soderstrom. *American Printer* 128, No. 2, February, 1949, pp. 43-44 (2 pages). Blanket construction and materials involved in blanket manufacture are discussed. Blankets are made in three degrees of hardness and should be selected with type of work in mind. A soft blanket should be chosen where the

runs are short and where the lithographer desires work to print correctly as soon as possible after the start of the run, while a harder blanket should be chosen for longer runs. Suggestions for the proper care of the blanket include: (1) Be sure that the holes are punched straight on a line across the blanket so that the distance between any two holes on opposite ends of the blanket is the same for any pair, and (2) Wash blankets with a solvent that evaporates quickly.

* THE ADJUSTMENT OF THE CYLINDERS ON THE OFFSET PRESS (In German). Willy Kuhl. *Das Druckgewerbe* March 1, 1949, p. 69 (1 page). Detailed instructions are given for the accurate adjustment of pressure between blanket cylinder and plate cylinder on one hand, and blanket cylinder and impression cylinder on the other. The necessary tools to accomplish this are micrometer, straight edge, and feeler gage. The necessity of making accurate measurements is emphasized, and the consequences of too much or too little pressure, as well as too hard or too soft packing enumerated.

* BLANKETS AND CYLINDERS. P. B. Mennell. *Modern Lithographer and Offset Printer* 45, No. 2, February, 1949, pp. 30, 32 (2 pages). Causes of tackiness and glaze of offset blankets are listed. Precautions to be taken to minimize these two troubles are discussed. Additional hints are given also to ensure optimum blanket life. Two methods are described for checking the correctness of cylinder packings.

Dampening systems

FOUNTAIN SOLUTION ROLLER. William Craig Toland, Munroe H. Hamilton, assignors to William Craig Toland. *United States Patent 2,453,735* (November 16, 1948). As an article of manufacture a roller for use in planographic printing, said roller being covered with a water-swellable material which includes a water-soluble dibasic acid. *Official Gazette* 616, No. 3, November 16, 1948, p. 691.

MOISTENING DEVICE FOR OFFSET PRESSES. *United States Patent No.* 2,448,226 (August 31, 1948). Horace Edwin Marsden. In a lithographic printing press, means for spraying a dampening agent in a dense mist of fine particles directly on to the surface of the printing plate comprising a series of fluid pressure atomizing units each provided with a valve for regulating the admission of compressed air, associated with a valve for regulating the admission of water under pressure in combination with means for adjusting said valves, means for operating said valves in each unit in predetermined succession, means for actuating said operating means, mechanism for adjusting and controlling the operation of said actuating means, and means for varying the function of said control mechanism for controlling the operation of any preselected number of said units independently of the movement of said control mechanism. *Official Gazette* 613, No. 5, August 31, 1948, p. 1260.

DAMPENING DEVICES FOR PRINTING MACHINES. C. E. Larsen. *British Patent No. 601,883.* Different quantities of liquid may be applied to different parts of the printing cylinder by dividing the roller surface of the dampening device into a number of distinct belts. The belts may be formed by a number of rollers arranged side by side in a row. Alternatively, a single roller may be divided into belts by annular grooves, or the belts may be formed by a number of rings fitted on a shaft, preferably so as to be axially movable thereon. Lateral distribution can be effected by means of intermediate rollers adapted to be reciprocated longitudinally whilst they rotate. *Printing Abstracts* 3, No. 10, October, 1948, p. 400.

* CELLOPHANE HELPS IN COVERING DAMPENERS. *Modern Lithography* 17, No. 2, February, 1949, p. 36 (1 page). Instructions and illustrations

are given for covering a dampener roller with cellophane prior to the installation of a new cover. If cellophane is applied properly it should last the life of three or four dampener covers and permit the cover to be drawn onto the roller with ease. On rollers with a water-absorptive surface under the cover it is especially helpful in preventing the penetration of the dampener solution into the under-surface. Thin sheet acetate will work equally well if cellophane is not available.

DAMPENING OR MOISTENING ROLLER. William C. Huebner. *United States Patent No. 2,464,040* (March 8, 1949). A dampening roller comprising a hollow cylinder adapted to contain a liquid therein and having a cylindrical wall of liquid permeable material with a shallow helical groove in its outer surface, a moisture-absorptive covering for said wall formed by a cord extending helically around the cylinder and seated in said groove with adjacent convolutions of the cord contacting each other outwardly beyond the groove for absorbing liquid permeating through said permeable wall from the interior of the cylinder, said cylinder having screw-threaded central openings in its opposite ends, and threaded closure plugs screwed in said openings and having axial extensions forming journals for rotatably mounting said roller. *Official Gazette* 620, No. 2, March 8, 1949, p. 611.

• A SHOP-MADE DEVICE FOR IMPROVED DAMPENING. Lawrence J. Grennan. *Modern Lithography* 17, No. 6, June, 1949, pp. 63-64 (2 pages). A steel band was silver soldered to a ball bearing unit, which was fastened to the end of the spindle of the damper roller. A spring was hooked to this unit. This device held the damper in good contact with the brass roller, and prevented skidding and slipping when the front edge of the plate hit the damper roller. The device resulted in a more even distribution of water on the plate.

Offset press operation

• BETTER LIGHTING FOR VIEWING COLORS AT NIGHT IN THE PRESS ROOM. William C. Stone and Andrew Balika. *Printing* 72, No. 5, May, 1948, pp. 60-62 (3 pages); *National Lithographer* 55, No. 5, May, 1948, pp. 40, 41, 90 (3 pages); *Modern Lithography* 16, No. 5, May, 1948, pp. 33-35 (3 pages); *Printing Equipment Engineer* 76, No. 2, May, 1948, pp. 23-25 (3 pages). Description of press inspection booth with colored fluorescent lamps covered by gelatin filters for viewing color (particularly at night) in the pressroom.

• PRESS PROBLEMS, Some Hints for Beginners. Eugene C. Moysen. *National Lithographer* 55, No. 6, June, 1948, pp. 36, 37, 109-110 (4 pages). Some hints for beginners on what to do about wrinkling of paper, offsetting, dropping portions out, ghost images, packing shifts during run, gear and roller streaks, uneven color density and several other problems frequently encountered by the beginner.

• MORE ABOUT THE DENSITOMETER. Charles F. King. *Inland Printer* 121, No. 6 September, 1948, pp. 72-4 (3 pages). This article deals with the use of the densitometer in actual press operation. Discussed are the influences of paper and inks on press sheet densities. Whiteness, roughness, grain direction and ink receptiveness of paper, and dilution and properties of inks are among factors to be considered in controlling densities.

PRESSROOM PROBLEMS IN OFFSET LITHOGRAPHY. Lithographic Technical Foundation Shop Manual No. 27, March, 1949, 61 pages, $.75. This manual contains 18 units covering the various problems that can occur in offset press work. Explanation and prevention of common troubles is its object, including mechanical troubles, and troubles arising from paper, ink, rollers, dampening water, plates and blankets.

Lithographic papers—general

• WHAT DO YOU KNOW ABOUT PAPER? *American Pressman* 58, No. 11, October, 1948, pp. 20-1, 48, 50, 52 (5 pages). Information is given on paper making, kinds of paper, basic weights and sizes of paper, and printing qualities that must be considered when selecting paper for various uses.

• OFFSET WATER MARKS Theodore Jarosik. *Share Your Knowledge Review*, 29, No. 12, September, 1948, pp. 29-30 (2 pages). Water marks or streaks appear in solids or large screen areas as a dark area constant in tone, followed by a lighter area of varying width. The rest of the image is comparatively constant in tone and free of streaks. These streaks or marks are caused by the gap in the plate cylinder, plus a combination of ink rollers and water conditions. Trials have proven the solution to be staggering in the circumference of the rollers so that no two rollers would be the same size.

• LITHOGRAPHY. Robert F. Reed. *1948 Yearbook of The American Pulp and Paper Mill Superintendents Association*, Inc., pp. 210-216 (7 pages). After a brief description of the lithographic process, the author enumerates the important facts about paper requirements for offset lithography. There are four main problems directly traceable to paper characteristics and deficiencies. They are the register problem, picking and splitting, ink-drying, and scumming and tinting. Each of them is discussed in detail and remedies pointed out where possible. The Lithographic Technical Foundation in cooperation with the National Bureau of Standards, as well as other research laboratories, are doing research in this field, which is important to the future progress of the lithographic industry.

* PAPER RESEARCH AND TECHNOLOGY AT THE NATIONAL BUREAU OF STANDARDS. Part I. Bourdon W. Scribner. *Paper Industry and Paper World* 30, No. 3, June, 1948, pp. 393-398 (6 pages). Part I of a two part article summarizing the activities of the National Bureau of Standards pertaining to paper and various other documentary materials such as photographic film, cellulose acetate sheeting and ink, and fiberboard. Brief accounts are given in the various fields of work which comprise papermaking materials and processes, testing methods, use of paper in printing, preservation of records and properties and specifications. Work on lithographic papers has been done at the request of and with the assistance of the Lithographic Technical Foundation. A bibliography of 193 references to publications on these subjects, by Bureau's staff is given.

HEAT-SEAL PAPERS. H. W. Taylor. *Modern Packaging* 21, No. 9; 149-51, 186 (May, 1948). Successful dry labeling or heat sealing with thermoplastic adhesives depends upon an understanding of time, temperature, pressure, and the insulating properties of paper or film. Each of these variables is defined and briefly discussed. Following a discussion of machine factors, the characteristics and properties required in a heat-seal paper are considered, with special reference to Thermo-Kote and Thermo-Stix, products of the Nashua Gummed and Coated Paper Co., Nashua, N.H. The temperature characteristics are of primary importance and must be related to the range of effective surface temperatures of the heat-seal activator in the machine under consideration. A high blocking point, combined with a relatively low minimum activation temperature, and uniformity of adhesive coating are generally desirable. The insulating properties of the label stock have a significant bearing on production speeds. On delayed-action machines, in particular, the factor of

adhesive build-up on the activator is important. Often a compromise between desired properties must be effected. Although the problem may seem bewildering with this array of variables, a well designed thermostatically regulated sealing machine simplifies the matter greatly. By the use of delayed-action thermoplastics, problems of heat dwell and the insulating properties of the label stock are brought under control. However, all thermoplastics are not alike and some present more problems than others. *Bulletin of the Institute of Paper Chemistry* 18, No. 10, June, 1948, p. 686.

• COATING PAPER ON THE PAPER MACHINE BY THE ROTOGRAVURE OFFSET METHOD. Gerald Haywood. *Paper Trade Journal* 127, No. 3, July 15, 1948, pp. 59-61 (3 pages). The equipment and operation of the rotogravure offset method of paper coating is discussed. The coating is applied from the color pan to a color roll which deposits the color on a knurled roll having a continuous pattern of cuplike indentations. A doctor removes the excess and the coating is transferred to the paper by the use of a rubber covered coating roll which is in contact with the knurled roll. The coating weight is determined by the number and volume of the engraved cups.

REVIEW OF THE LITERATURE OF PRINTABILITY AND ALLIED SUBJECTS, 1946-1947. S. M. Chapman. *Pulp and Paper Magazine of Canada* 49, No. 3, 107-14 (1948); cf. C.A. 41, 4919e. The review covers testing, printing properties of paper, printing troubles, and printing inks. 43 references. *Chemical Abstracts* 42, No. 13, July 10, 1948, p. 4751.

• MACHINERY FOR PLASTIC COATINGS. Arthur Gaio. *Paper Trade Journal* 127, No. 21, November 18, 1948, pp. 119-123 (5 pages). The problem of selecting the machine most suitable in applying a particular type of protective or decorative coating is discussed. The four general types of coaters used for plastics are, namely, knife, roll, air, and cast coaters. The three important knife coaters are: the floating knife coater, the blanket type knife coater, and the rubber spreader. The most important roll coaters include the doctor kiss coater, roll kiss coater, edgewise coater, one side and two side roll coaters, and the reverse roll coater. The two cast coaters worthy of mention are the casting drum coater, and the casting belt coater. The design, applications, advantages and disadvantages of each of these coaters and the Microjet or air knife coater are described. Twelve illustrations are given.

STATIC ELECTRICITY. "BLIND SPOTS." C. R. G. Maynard and James Strachan. *Paper-Maker* 116, No. 1, July, 1948, pp. Technical Section 8 (1 page). An inquiry prompted by Strachan's article relates to "blind spots" appearing on paper after calendering the nonremoval of static by the cooling rolls. Strachan's reply and explanations are appended. *Bulletin of the Institute of Paper Chemistry* 19, No. 1, September, 1948, page 49.

•A STUDY OF PENETRATION OF STARCH ADHESIVE IN A COATING MIXTURE INTO BASE PAPER. James P. Casey and C. E. Libby. *Paper Trade Journal* 127, No. 25, December 16, 1948, pp. 83-90; No. 26, December 23, 1948, pp. 35-41 (15 pages). The factors which affect the penetration of the adhesive in a coating mixture into base paper, and the relationship between the depth of penetration of the adhesive into base paper and the properties of the final coated sheet are discussed. The results indicate that the depth of penetration of the starch adhesive into the base paper is decreased by; increased sheet

density, increased sizing, decreased sheet moisture content, and to a lesser extent by the presence of alumina in the sheet. There appears to be a definite relationship between the depth of penetration of the adhesive in microns and the ink receptivity of the coating. However, there is no definite relationship between the depth of penetration and the wax number of the coating since this property seems to be more affected by the strength of the base paper than by the depth of penetration of the adhesive. Increasing the depth of penetration of the adhesive tends to decrease the smoothness of the uncalendered coating.

*WHAT'S NEW IN TECHNICAL COOPERATION. Mark W. Frishkorn. *National Lithographer* 55, No. 11, November, 1948, pp. 32-33, 80, 96, 98 (5 pages). Work being conducted at Interchemical Corporation on coatings for metal decorating is of three types: technical service which involves demonstrating and maintaining in production the most effective use and application of the coatings; production development which includes not only the formulation of coatings required for specific purposes, and individual modifications of standard grades, but also the perfection of new finishes along broad lines; and applied research, recent developments of which are the Adherometer, wet film thickness gage, and viscosity cup conversion calculator. The use of these instruments is described and illustrated.

METHOD OF AND APPARATUS FOR DRYING SHEET MATERIALS BY HIGH-FREQUENCY ELECTRIC FIELDS. Wallace P. Cohoe and Mitchell Wilson, assignors to Frederick H. Levey Co. *United States Patent No. 2,459,622* (January 18, 1949). The method of drying a sheet which comprises maintaining a plurality of substantially parallel spaced electric fields, unaccompanied by corona discharge, between spaced pairs of electrodes connected to a source of high frequency alternating current, moving said electrodes and the resultant electric fields and advancing the sheet relatively to said electrodes over and in peripheral contact with them at a rate different from that at which the electrodes are moving, wherby the region of greatest intensity of said electric fields is caused to deviate from its normal path directly between said electrodes and to pass through said sheet. *Official Gazette* 618, No. 3, January 18, 1949, p. 917.

* MOTTLE — ITS CAUSE AND CURE. David Horowitz. *American Ink Maker* 27, No. 3, March, 1949, pp. 27-28 (2 pages). Factors responsible for mottle are extremely varied. Among the important causes are the variables inherent in paper surface tension, improper grinding of colors or the incorporation of coarse pigments in the ink, improper setting of rollers, and improper adjustment of the ink setting mechanism. Therefore elimination of mottle requires the cooperation of pressman, ink maker, and paper maker.

* THE SYSTEMATIC IDENTIFICATION OF SPOTS AND SPECKS IN PAPER. J. A. Dalton and W. A. Wiltshire. *Paper-Maker and British Paper Trade Journal* 117, No. 3, March, 1949, pp. 173, 174, 176-79 (6 pages). A procedure is described for identifying spots and specks in paper in a few minutes time. Fourteen tables are given showing steps of procedure in order, and describing necessary tests.

MANUFACTURE OF PAPER. Kay Crabtree. *United States Patent 2,461,109* (February 8, 1949). In the seasoning of paper to eliminate curling and wavy characteristics, the paper as it leaves the machine is passed over a hollow "seasoning" drum through which is circulated a cooling liquid to chill its surface. The paper is properly seasoned by the cooling effect of the drum and also by the moisture which is absorbed by the paper (this moisture collects as condensate on the chilled drum surface). The cooling agent may be water, brine, or other liquid which has been cooled to a predetermined temperature—e.g., 41° F. The drum may constitute the expander of a refrigerating circuit of the

compressor-condenser expander type. *Bulletin of the Institute of Paper Chemistry* 19, No. 7, March, 1949, pp. 520-21.

* NEW COATING PROCESS. *Paper Industry and Paper World* 31, No. 2, May, 1949, pp. 184, 186 (2 pages). A new paper coating process is described in which the coating adhesive is hydroxy alkyl cellulose. A mixture of pigment, HAC and caustic soda is applied to the paper by any of the known methods. The coating is then immediately contacted with a solution of a salt such as ammonium sulfate, which precipitates the HAC. The stock is then passed between squeeze rolls to remove excess water, and dried. The process is suited for machine coating and it is claimed that no calendering is necessary. The paper is suitable for both letterpress and offset.

MANUFACTURE OF PAPER. Kay Crabtree. *United States Patent No. 2,461,109* (February 8, 1949). The process of seasoning paper which comprises continually supplying the web as it comes from the dry end of the paper making machine to, and moving it in contact with a cold, moist, elongated surface and simultaneously chilling and moistening a substantial length and area of a side of the web during its contact with said surface, and then continually rolling up the so-moistened chilled web from said surface into a close coil and moistening the other side through transfer of moisture thereto by contact with the previously moistened side as the coil is formed, the moistening of the one side of the web and the chilling of the web by said surface being prolonged by contact of the web therewith until removed from said surface and coiled and the moistening of the opposite side of the web being continuous with the coiling of the web and continuous with the chilling and moistening by said contact surface. *Official Gazette* 619, No. 2, February 8, 1949, p. 484.

STATIC ELIMINATION. *American Newspaper Publishers Association Research Bulletin No. 6*, 1949, 18 pages. The following devices for the control of static are discussed; electric bars, gas bars, heat and powder sprays, tinsel, infrared heat and controlled humidity. One section is devoted to the Alphatron static eliminator which makes use of polonium as a neutralizer and another to the Ionotron bar which uses radium to accomplish static elimination. Measurements and tests conducted with the Ionotron bar are included. Radium emits alpha, beta, and gamma rays. A by-product of the distintegration process of radium is a deadly but chemically inert gas called radon. Certain limitations placed on radon gas concentrations in workrooms are explained. Charts are included giving estimated safe distances from radio-active sources. Estimated safe distances from radio-active sources are greater for beta than for gamma rays, and this is explained. Also discussed are the possible injurious effects of radiation (from radium) on operating personnel. A summary pointing to certain scientific finds in connection with the use of radium as a static eliminator is included. In the case of the Ionotron no published information is available to show whether long-continued exposure at low intensity brings about eventual injuries. *Printing Abstracts* 4, No. 4, April, 1949, pp. 167-8.

* COORDINATED COBALT SOAPS AS PAINT DRIERS. Edward A. Worthington and Douglas G. Nicholson. *Paint, Oil and Chemical Review* 112, No. 11, May 26, 1949, pp. 20, 40-45 (6 pages). A simple cobalt oleate drier (I) was compared with a coordination compound of cobaltic oleate with orthophenanthroline (II). Mixtures were used containing alkali refined linseed oil, (III) acid linseed oil (IV), and with and without titanium dioxide (V) as a pigment. The tests involved spectrophotometric absorption curves, peroxide values, molecular weight changes, and percentage increase in weight of films. Peroxide formation is more rapid with II than I in presence of III or IV. Molecular weight increase is more rapid with II than I in solution of III, but is reversed in presence of IV. When V is present, oxygen absorption is more rapid with II than I, in presence of III, but again the reverse is true in presence of IV. The presence of V in the mixture exerts a pronounced effect on peroxide formation, etc. The effects of all of these variables are plotted on 18

graphs in the article.

* PROBLEMS IN GLOSS EVALUATION. Daniel Smith. *Interchemical Review* 7, No. 4 Winter, 1948-49, pp. 95-108 (14 pages). The author discusses problems in gloss evaluation. He describes present methods and concludes that more extensive psychological studies are necessary if a useful psychophysical correlation of gloss evaluation is to be obtained.

* BRONZING (In German). René Graf. *Fachefte* No. 1, 1949, pp. 20-24 (5 pages). This is a discussion of a previous article which appeared in February, 1948. It is important to adapt the gold size to the kind of paper used on a particular job. It should be compact, slightly tacky, and dry with a luster. Several recipes for preparing it using cobalt drier are given. The sizing must not contain chromium, lead or acid containing inks. In case of strongly absorbing papers, a mixture of Venetian turpentine, wax, and Canada balsam may be added. If after making proofs, there is doubt whether the bronze will adhere to the paper it is recommended that you consult your ink manufacturer. A preprinting with varnish will improve adherence of the bronze. The same plate can be used for it as in printing the gold size. If a two-color press is at hand the bold lettering and the solids can be printed twice. The following things are said to cause discoloration of the bronze: (1) improperly formulated gold size, (2) the addition of acid driers, (3) acid in the fountain solution, (4) acid or chlorine in the paper, (5) bronze of inferior quality, (6) using left-over inks containing harmful ingredients (7) the action of hydrogen sulfide.

* OFFSET PAPERS — TIPS ON HANDLING PAPER. Robert F. Reed and James J. Spevecak. *Modern Lithography* 17, No. 6, June, 1949, pp. 43-44, 109, 111, 113 (5 pages); *National Lithographer* 56, No. 6, June, 1949, pp. 46, 85, 87, 91 (4 pages). Questions and answers are given from "quiz" on offset papers held at NALC Convention. Among topics covered were the characteristics of Kromekote paper, handling of coated paper, common causes of picking of paper on press, curling of gummed paper on the press and its prevention, causes of chalking and remedies, method of checking straightness of paper on gripper edge, measuring pH value of paper, and curling of coated-1-side label stock.

* WHAT THE LITHOGRAPHER SHOULD KNOW ABOUT PAPER. Robert F. Reed, *Lithographic Technical Foundation Technical Bulletin No. 8*, April, 1949, 101 pages, $2.50. This book is a summary of the technical and practical knowledge of lithographic paper accumulated through research by the LTF and the National Bureau of Standards during the past 20 years. After a discussion of the manufacture and properties of paper, it reviews lithographic paper troubles and their prevention and cure. Special attention is given to register problems, air conditioning, paper conditioning, curling and static troubles. A valuable chapter is included on practical paper testing for lithographers.

* PAPER—A PRINTER'S RAW MATERIAL. Robert W. Pattison. *Paper Trade Journal* 129, No. 1, July 7, 1949, pp. 32-33 (2 pages). The necessity of a close working relationship between the printer and paper maker is stressed. The more information the paper maker has regarding "use requirements" of his paper, the better position he is in to make paper that will be processed with a minimum of trouble. The effect of humidity on paper and its relation to lithography and the conditioning of paper are discussed. Paper surface and density are important factors that influence the finished job of printing.

* THE PROBLEM OF FOAM IN THE PAPER MILL. S. V. Sergeant. *Paper Maker and British Paper Trade Journal* 117, No. 6, June, 1949, pp. 411-414, 416, 417 (6 pages). The various types of foam are described together with methods of production. Causes of foam and methods for its control in the paper mill are discussed.

Paper materials

A REVIEW OF THE LITERATURE ON PRINTABILITY AND ALLIED SUBJECTS, 1946-1947. *Pulp and Paper Magazine of Canada* 49, No. 3, Convention Issue, 1948, pp. 107-17. This bibliography covers the approximate period from September, 1946 to September, 1947. Like previous bibliographies in this series, no attempt has been made to cover all phases of paper and printing, but rather to include only those articles which have the most direct connection with the printing use requirements of paper and paperboard. The articles have been roughly divided into the following five classes: testing, printing properties, printing troubles, printing inks, and miscellaneous. 43 references. *Bulletin of the Institute of Paper Chemistry* 18, No. 8, April, 1948, p. 542.

• RESIN BONDING AND STRENGTH DEVELOPMENT IN OFFSET PAPERS. Charles G. Weber, Merle B. Shaw, Martin J. O'Leary, Joshua K. Missimer. *Paper Industry and Paper World* 30, No. 1, April, 1948, pp. 83-88 (6 pages). A series of experimental offset papers were made by the National Bureau of Standards in which the strength and resistance to surface pick were developed mainly by bonding the fibers with a synthetic resin instead of by the commercial beating. The papers were made from three widely different furnishes of commercial wood pulps, and the principal bonding agent was melamine-formaldehyde resin. In all instances, the resin-bonded papers were superior with respect to curling, oil absorption, folding endurance and resistance to tear than gel-bonded control papers with comparable bursting strength and resistance to pick. Expansion also was improved in sulphite-soda papers. Only small amounts of resin were required to improve greatly the strength of papers composed principally of short-fibered filler pulps.

PIGMENTS FOR PAPER COATING. *Technical Association of the Pulp and Paper Industry, Monograph No. 7,* 135 pages. This monograph is a source of basic information on white pigments for paper coatings, their use, and the properties they impart to coated paper. Each of ten chapters is devoted to a particular pigment.

• PAPER AS APPLIED TO PHOTOLITHO OFFSET. A. E. Rayner. *British and Colonial Printer* 144, No. 1054, January 14, 1949, pp. 37-39 (3 pages). A wider variety of papers can be used in offset lithography than in most other printing processes. However, in order to obtain the best results in this process certain qualities are desirable in paper. These qualities are listed and discussed. The various characteristics of papers made from rag, esparto grass, and wood pulp are briefly summarized. Paper troubles occurring in offset lithography which are discussed include picking, fluff, moisture and humidity troubles, chalking and powdering, and offsetting.

• HOW TO DETERMINE PH VALUE OF PAPER. *Research Progress* 1, No. 9, September-October, 1948, pp. 1-2 (2 pages); *National Lithographer* 56, No. 4, April, 1949, p. 38 (1 page); *Modern Lithography* 17, No. 4, April, 1949, pp. 33, 99 (2 pages). A new Research Bulletin being published by the Lithographic Technical Foundation discusses the possible chemical effects of paper and paper coatings on lithographic printing. Paper or coatings that are too acid or alkaline may have a harmful effect on the printing plate and may cause ink drying trouble. Directions are given for testing coated and uncoated stocks to determine their pH values. The importance of clean test tubes, beakers, and electrodes of the meter in making these tests is emphasized.

Coated and calendered papers

• A NEW METHOD OF COATING PAPER INVOLVING ION EXCHANGE. D. Robert Erickson. *Paper Trade Journal* 128, No. 25, June 23, 1949, pp. 96-97 (2 pages). The present-day physical method of paper coating and the new chemical method involving ion exchange are compared. The new coating mix consists of pigment and adhesive, the latter being a hydroxy alkyl cellulose dissolved in dilute sodium hydroxide. Immediately upon being coated, the paper surface is treated with a salt such as ammonium sulfate that precipitates the binder as a solid nontacky film. Advantages of a sheet coated by the new method are many. It does not require supercalendering, it has much greater brightness, more opacity, more flexibility, much greater affinity for ink, much better adhesion of ink to the surface, better lay of ink on the surface, much better compressibility of the coated sheet to save make-ready time on press, and uniformity of finished product. This new process is ideally suited for "on the machine" coating, especially on machines that already include a size press. It is also suited for simultaneous double side coating. When suitable unpigmented coatings are applied by the same process to paper or board, the resultant products are oilproof, grease-proof, and solvent-proof.

Paper conditioning

DOYLE VACUUM SHEET CLEANER. *Printing Equipment Engineer* 1948, 75 (6), 39, March. The Doyle Vacuum Sheet Cleaner is designed to remove automatically dirt, lint, coating particles or other foreign matter from the paper surface as it is fed into the press. The cleaner is designed for application to any type of cylinder press—letterpress, offset, or gravure, web or sheet-fed. The Doyle Vacuum Sheet Cleaner consists of a high-speed motor-driven suction fan suitably housed in one unit, a small bag for collecting the foreign particles removed from the paper surface a connecting hose extending from the motor-driven unit and an adjustable manifold extending across the width of the press. The manifold is provided with graduated openings so that the particles are removed from the paper efficiently. *Printing Abstracts* 3, No. 6, June, 1948, p. 242.

• AMBERLITE W-1 INCREASES DRY STRENGTH OF PAPER. *The Resinous Reporter* 9, No. 6, November, 1948, p. 13 (1 page). "Amberlite W-1" applied as a spray to the wet paper web before drying, increases the tensile strength of paper either wet or dry. Other properties of paper such as pick resistance, fold and abrasion resistance are all improved. The article gives details and concentrations needed, time of curing, etc.

• HUMIDITY AND THE PAPERMAKER. A. Lees. *Paper Maker and British Paper Trade Journal* 116, No. 4, October, 1948, pp. TS 33-38 (6 pages). The theory of humidity and its measurement are described and some of the terms met with in hygrometry are defined. Methods of humidity control and the relationship of humidity to paper finishing are discussed.

HUMIDITY AND THE PAPERMAKER. A Lees. *Paper-Maker* 116, No. 4: TS33-38 (October, 1948). The fundamentals of hygrometry are explained, instruments for measuring and controlling humidity are described, and the problem of humidity in relation to paper finishing is discussed. Paper conditioning in the mill is desirable and many attempts have been made to condition paper on the paper machine itself. However, for high-class paper it is usually necessary to condition it in a separate unit. Brief reference is also made to methods of air conditioning and dehumidification. *Bulletin of the Institute of Paper Chemistry* 19, No. 4, December, 1948, pp. 259-60.

THE CONDITIONING OF PAPER. A. Hugh Rutt. *Svensk Papperstidn* 51, No. 18, 413-17 (September 30, 1948). The Air Conditioner, an enclosed continuous conditioning chamber following the paper machine and operating at 37.7° C. and 90% R.H., is described in detail and illustrated. The following results are claimed with the installation of this machine: the conditioned paper always contains the requisite amount of moisture; the moisture content is uniform across the web; static electricity and curl are completely removed; the printed paper lies flat and is very easily handled, and if the printer has good warehouse accommodations and reasonably good printing rooms, register is found to be absolutely accurate even with 12 colors. *Bulletin of the Institute of Paper Chemistry* 19, No. 4, December, 1948, p. 260.

• AUTOMATIC MOISTURE RECORDING FOR PAPER USERS. A. G. Hope. *Paper and Print* 21, No. 4, Winter, 1948, pp. 332, 334 (2 pages). The latest instruments for automatic moisture recording are described. They give a direct and immediate reading of the moisture content by the resistance which this moisture offers to the passage of a fine electric current. This is amplified and the result made to appear on an indicator dial in percentage figures. For single sheets of paper, a clamp type of arrangement makes the necessary contact, while a bayonet type of extension is specially suited for testing stacked paper. The application of these recorders in paper making and in printing is discussed.

Paper testing

• STATIC ELECTRICITY IN PAPER-MAKING AND PAPER USING. James Strachan. *Paper Maker and British Paper Trade Journal* CXV, No. 5, May, 1948, pp. TS 37-39 (3 pages). The contact theory of static electricity is explained. Briefly it is that when two surfaces are pressed into intimate contact with each other there is a disturbance of the double electric layer followed by a passage of electrons, or sometimes ions, from one surface to the other. Electrification of paper on the paper-machine, in the mill after the paper-machine, and in paper consuming industries after being sent out of the mill is discussed. Results are given on tests for the classification of papers and their electrical charges.

• WAX–FOR TESTING OFFSET PAPERS. William J. Stevens. *National Lithographer* 55, No. 7, July, 1948, pp. 34-35 (2 pages). The wax pick test is used to determine the printability of paper and whether trouble is likely from either coating pick or bodystock split. Step by step instructions are given for making a wax pick test using the 16-wax series put out by the Dennison Manufacturing Co. which is so designed and standardized as to have a graduated degree of adhesion.

STANDARDIZATION OF THE BENDTSEN TESTER FOR MEASUREMENT OF NEWSPRINT PAPER ROUGHNESS. C. A. Sankey and P. H. White. *Pulp Paper Magazine of Canada* 49, No. 3, 99-106 (1948). Details are given of the standardization of the head of the Bendtsen tester (*Chemical Abstracts* 34, 30875) and of studies leading to specification for the complete testing unit. The value of the tester for use with newsprint is discussed. *Chemical Abstracts* 42, No. 13, July 10, 1948, p. 4750.

• DETERMINING THE PRINTING SMOOTHNESS OF PAPER. *Paper Maker and British Paper Trade Journal,* Midsummer Number, 1948, pp. 43-45 (3 pages). A procedure is described for determining smoothness of printing paper by three different

instruments: the Bekk, the Gurley-Hill S-P-S, and the Williams. This is a method suggested by the Technical Association of the Pulp and Paper Industry: however, it is not a TAPPI standard.

• TESTING PRINTABILITY OF PAPER WITH INK. Otto P. Berberich, Louis F. Engelhart, and Milton Zucker. *Paper Trade Journal* 127, No. 7, August 12, 1948, pp. 53-57 (4 pages); *American Ink Maker* XXVI, Part 1—No. 7, July, 1948, pp. 26-28, 59 (4 pages); Part II—No. 8, August, 1948, pp. 26-28, 51 (4 pages) — Total 8 pages. Testing of printability of paper with ink is discussed. Modifications to past printability tests are necessary because of present high-speed web presses, and also the widespread experimentation in the production of papers whose resistance to picking cannot be predicted by the Dennison Wax Test. The method by which a No. 4 Vandercook test press is set up and used for tests at International Printing Ink, and the controlled conditions under which these tests were made are described.

• PAPER TESTING IN RELATION TO END-USE. M. S. Kantrowitz. *Paper Trade Journal* 128, No. 25, June 23, 1949, pp. 84-87 (4 pages). Evaluation of paper properties from the standpoint of the printer is discussed. Physical tests for durability include those for folding endurance, bursting strength, tensile strength and tearing resistance. Among the chemical tests applied for evaluating permanence of paper are those for determining fiber content, acidity, alpha cellulose copper number, per cent rosin, and impurities such as chlorine, iron, and sulfur. The most important paper characteristics from the printer's standpoint are smoothness or finish, ink receptivity, porosity or air permeability, surface bonding strength, opacity, thickness, moisture content, formation, color, and general appearance. Tests for evaluating these properties are also discussed.

Lithographic inks—general

• NEED STANDARDS FOR OFFSET INKS. Charles F. King. *Inland Printer* 121, No. 4, July, 1948, pp. 83-85 (3 pages). The need for a standard method of determining the properties that a lithographic ink should have is pointed out. The standards would not be formulas, but would merely be methods of determining the suitability of an ink for the job on which it is to be run. Since the properties of an ink and those of the fountain water are so interdependent, it is necessary that the properties of both be determined. It is stated that a study should be made of both ink and desensitizing agents at the same time, and in turn the effect of paper surface on them.

• PRINTING INKS — THEIR VARIATIONS AND SCOPE OF PRINTABILITY. H. Bettye Stout. *Western Printer and Lithographer* 2, No. 5, August, 1948, pp. 16, 28 (2 pages). The wide variety of requirements for inks and the raw materials used in their manufacture are discussed. The formulation of ink for a particular job depends on the following four factors: the style of press on which the job is to be printed, the kind of paper, the sequence in which the colors are to be run, and the end use of the product. The relationship of ink to paper is discussed and a list is given of characteristics which, if present in paper, will have a deleterious effect on its printing quality.

PRINTING INKS. Herbert Jay Wolfe. *Modern Plastics Encyclopedia* 1948, 576-8 (1948). Recent developments in synthetic resins have produced a new fast-drying ink said to make possible improvements in printing methods; a new thermo-reactive ink for slik screening on glass and phenolic, melamine-and urea-formaldehyde, acrylic plastics, uncoated or alkyd-coated metal, and thermosetting resinous pig-

mented films; and a new series of inks for printing polyethylene, polyvinylidene chloride, and rubber chloride. A discussion is presented of typographic, lithographic, and intaglio printing methods and inks, ink vehicles and inks for plastic surfaces. *Bulletin of the Institute of Paper Chemistry* 18, No. 12, August, 1948, p. 863.

* INK RESEARCH INSTITUTE. Charles F. King. *Inland Printer* 122, No. 2, November, 1948, p. 53 (1 page). The functions of the National Printing Ink Research Institute in the study of ink-water systems as they affect lithography, and cooperation of the NPIRI with LTF in this work are discussed. A plea is made for publication of the NPIRI Standards for the benefit of the entire industry. The precedent set by LTF and TAPPI in this respect are cited.

GAS ADSORPTION – A NEW PRINTING INK RESEARCH TOOL. Albert C. Zettlemoyer. *American Ink Maker* 26, No. 1, 25-7, 59 (1948). Method for *surface area measurement* and *pore-size* determination by gas adsorption are described. *Chemical Abstracts* 42, No. 9, May 10, 1948, pp. 2835, 2836 (2 pages).

* DRYING OF PRINTING INKS. W. C. Walker. *American Ink Maker* XXVI, No. 6, June, 1948, pp. 33, 35, 57, (3 pages). Work at the National Printing Ink Research Institute on the drying of printing inks is discussed. Factors influencing the drying of printing inks are numerous and include most of the physical and chemical properties of the ink and paper, as well as the surrounding and press conditions. It is pointed out how the paper controls both the initial set of the ink and its final hardening. The methods and instruments for measuring ink drying time are described. The problem of drying time stability of inks has been combated successfully at the N.P.I.R.I. by using a drier which is not absorbed, coating the solid surfaces to prevent absorption, and using an insoluble feeder drier.

* WHY ALKYDS IN PRINTING INKS? PART II. H. F. Payne, L. E. Cadwell, R. H. Brailey, A. F. Schmutzler. *American Ink Maker* XXVI, No. 1, January, 1948, pp. 28-9, 31, 33, 34 (5 pages). Part II of a series of articles. A list is given of fatty acids used for alkyds, and formulas are given for several modifications of natural oils, such as maleic anhydride treated oils and styrene treated oils. Several samples of lithol red inks were prepared with and without the addition of an alkyd resin (Rezyl 869), and tested for mixing time, viscosity, drying time and resistance to bleeding by fountain solution. The same tests were repeated with samples of light chrome yellow inks. The addition of the alkyd reduced drying time, increased film toughness (increased resistance to smudging) and in the case of the red inks, increased resistance to action of fountain solution.

*EFFECT OF INKS ON ROLLERS AND BLANKETS IN PRINTING. A. C. Zettlemoyer. *American Ink Maker* 26, No. 9, September, 1948, pp. 47-50, 81, 83, 85 (7 pages). Mechanical failures prevalent in the use of rollers are listed and the relationship of ink to these troubles is discussed. Among the properties required by rollers and blankets are physical durability, ink receptivity, ink stability, proper hardness or softness, chemical durability. Brief descriptions are given of the functions and physical properties of glue-glycerine rollers and rubber rollers, blankets, and plates. Except for the property of softness (and possibly lint pick up) the synthetic rubber rollers perform better than the glue-glycerine rollers. Solvency tests are given for a wide variety of ink vehicles and other reagents on a typical Neoprene-

based offset blanket as a guide to present and future ink formulation.

• THE RESEARCH INSTITUTE—ITS AIMS AND ACCOMPLISHMENTS. W. C. Walker. *American Ink Maker* 26, No. 12, December, 1948, pp. 21-23, 55 (4 pages). The work of the National Printing Ink Research Institute toward raising the scientific status of the printing ink industry can be classified into four main headings: test methods, industry problems, raw materials, and fundamental studies. The importance of standard test methods for the printing ink industry and instruments valuable in these tests such as the Grindometer and drying time recorder are discussed. Industry problems now being studied by the Institute include the greasing of lithographic inks and the loss of drying on aging. Among the new types of raw materials being examined at present are the petroleum drying oils. Fundamental studies, which are conducted by the Institute to further their basic understanding of the physical systems involved in printing inks so that the problems of the industry can be attacked more intelligently, at this time include ink viscosity, and pigment vehicle relationships in inks.

• A SURVEY OF LABORATORY INSTRUMENTS FOR THE PRINTING INK INDUSTRY. *American Ink Maker* 26, No. 12, December, 1948, pp. 27-31 (5 pages). A survey was made recently by the New York Printing Ink Production Club of the instruments available for use in studying pigments and pigment dispersions. The instruments listed and discussed include: mullers, three roller mill, sieves, fineness of grind gages, microscopes, extractors, viscosity and flow instruments, specific gravity instruments, vapor pressure measuring instrument, flash point measuring instruments, colorimeters, spectrophotometers, the inkometer, fadeometer, drying time recorders, balances, tensiometer, refractometer, pH meter, photo volt meter and proof presses.

FURTHER OBSERVATIONS OF WETTING AND DISPERSION. R. F. Bowles. *J. Oil. Col.* Chem. Assoc., 1948, 31 (337), 250-60 (July). The parts played by wetting and dispersion in connection with the thixotropy of paints and inks are discussed. *Printing Abstracts* 3, No. 10, October, 1948, p. 421.

•MOTTLE. A. C. Healy. *American Ink Maker* 26, No. 12, December, 1948. pp. 35, 37 (2 pages). Mottle is said to occur when an ink does not print uniformly on the solid areas. The most common form of mottle is variation in the depth of color which appears as light and dark shades. It may also take the form of matt and glossy patches. Its main causes may be summarized as unsuitable printing presses, unsuitable inks, poor paper, and bad printing. Suggestions are given on how to avoid this trouble.

• PRINTING INKS: SOME RECENT STUDIES. R. F. Bowles. *British and Colonial Printer* 143, No. 1046, November 19, 1948, pp. 362, 365 (2 pages). The importance of physical properties of inks is discussed. Fundamental physical properties of inks are color, consistency, and drying. Recent studies and developments in the field of printing inks are described.

• PRINTING INK — PAST AND PRESENT. Earl K. Fischer. Part I—*American Ink Maker* 26, No. 8, August, 1948, pp. 21-23, 47, 49: Part II—*American Ink Maker* 26, No. 9, September, 1948, pp. 59, 61, 87 (8 pages). Ink use and formulation from printing ink origin to the present day are discussed. In principle the printing inks of today are little different from those used by the first printers, but in variety, quality, and uniformity there is little comparison. The typographic, offset, and gravure processes and ink requirements of each are briefly described. The two main ingredients of all printing inks are the

vehicle and the pigment. Properties and uses of various pigments and vehicles and ink dispersion and formulation are also discussed briefly.

• RHEOLOGY OF TYPOGRAPHY PRINTING INKS. Andries Voet. *American Ink Maker* 27, No. 2, February, 1949, pp. 27-30, 41 (5 pages). This article is a discussion of the consistency requirements of typographic ink. There are three stages of ink manipulation in typographic printing: the "transport" phase, which brings the ink to the fountain roller; the "distribution" phase, in which ink is distributed over the rollers and form; and the "transfer" phase, in which the ink is transferred from form to paper. These phases are analyzed in terms of ink consistency requirements. The various methods of measuring ink consistency are reviewed critically and a new type of tack meter is suggested. The author concludes, however, that a better understanding of the relationship of ink flow and tack is needed.

DUPONT OFFERS NEW CHEMICAL. *American Ink Maker* 27, No. 6, June, 1949, p. 49. E. E. du Pont de Nemours & Company, Wilmington, recently announced commercial production of trimethylhexanol, a long-chain primary alcohol. Esters of the chemical offer promise as plasticizers and as additives to improve the viscosity index of oils. The cobalt and lead salts of trimethylhexanoic acids are effective driers for inks and other compositions containing drying oils.

NEW DRIER PATENT. A. Kutzelnigg. *German Patent No. 735,912.* A new series of driers can be prepared using the xanthate radical as the solubilizing agent. Precipitation of a suitable metal solution with potassium acid xanthate permits recovery of crystalline metal xanthate which can easily be purified. These compounds are said to have good solubility in oils and solvents. *American Ink Maker* 27, No. 6, June, 1949, p. 57.

Ink materials and structures

• MODERN CONCEPTS OF PRINTING INKS. I. M. Bernstein. *American Ink Maker* XXVI, No. 5, May, 1948, pp. 33, 37, 39-40, 61, 63 (6 pages). Developments in the printing ink industry during the past quarter century are summarized. Formulation of printing ink continues as an art, but is gradually being permeated by science due to problems imposed by higher printing speeds and necessity for improving quality of reproduction. Basic ink formulation principles are described. Drying oils, driers, resins, solvents, and pigments and their use in ink formulation are discussed. Purposes and characteristics of the following inks are set forth: non-scratch inks, gloss inks, heat-set inks, steam-set inks, wax set inks, quick-set inks, aniline inks, lithographic offset inks, rotogravure inks, metallic inks, doubletone inks.

• THE PHYSICS AND CHEMISTRY OF PIGMENTS. C. E. Barnett. *Papers Presented at 25th Anniversary Meeting, Division of Paint, Varnish, and Plastics Chemistry of the American Chemical Society,* April, 1948, pp. 4-21 (18 pages). This article attempts to assess the present state of knowledge of the fundamental physical and chemical characteristics which are responsible for the usefulness of pigments. The optical properties of pigments, their surface chemistry, and new pigments and important improvements in the old ones during the past 25 years are among the topics dealt with.

• PHYSICS AND CHEMISTRY OF PIGMENTS. C. E. Barnett. *Industrial and Engineering Chemistry* 41, No. 2, February, 1949, pp. 272-279 (8 pages). The optical performance of pigments is related to the three phenomena of absorption, refraction and scattering, and the influence of each is discussed. Recent research in the surface chemistry of pigments (wetting, heat of wetting,

adhesion, interfacial tensions, contact angle hysteresis, etc.) is summarized.

• GREASING OF LITHOGRAPHIC INKS. A. C. Zettlemoyer. *American Ink Maker* 27, No. 1, January, 1949, pp. 27-29, 61 (4 pages). Causes of greasing of lithographic plates are discussed and ten of them listed. A theory is presented regarding the greasing mechanism. Several tests for the greasing tendency of lithographic inks which are being investigated are described.

• THE FUNCTION OF PIGMENTS IN PRINTING INKS. A. C. Healey. *Paint Manufacture* 18, No. 11, November, 1948, pp. 388-390, 396 (4 pages). The various pigment-consuming industries have very different requirements in the properties of the pigments they use. In the printing-ink industry the properties required of pigments vary considerably according to the type of ink into which they are to be incorporated. In this article the function of pigments in printing inks is described from the point of view of the ink maker.

NEW SYNTHETIC LATEXES AS PIGMENT BINDERS IN CLAY-COATED PAPERS. E. K. Stilbert. *Technical Association Papers* 31, 585-6 (1948). The uses of a styrene-butadiene latex (Dow latex 512) as a coating adhesive are discussed; it is used principally in printing and decorative papers and wallpaper. *Chemical Abstracts* 43, No. 3, February 10, 1949, p. 1180.

Ink testing and control

• INK COLOR, CONTROLLED ON PRESSES BY PHOTO-CELL INSURES ACCURACY. *Printing* 72, No. 9, September, 1948, pp. 47, 64 (2 pages). Experience of the Braznell Corporation with Photovolt's photo-electric reflection meter is discussed. This instrument measures ink photo-electrically and permits control of color on both sides of sheet during a run and from one run to another.

• PHOTO ELECTRIC CONTROL OF INK FLOW. G. Stuart Braznell. *Modern Lithography* 16, No. 9, September, 1948, pp. 67, 129, 131 (3 pages). The author describes experiments using a photo-electric reflection meter and color filters to control ink flow on the press. The use of this instrument is quick, simple, and according to all results, very accurate. In order to take readings with the instrument, it is necessary to have solids of approximately ½" diameter. The filter colors are blue, green, yellow and red which were found to cover all color applications. It is stated that a reading taken of wet ink would be duplicated at a later time when the ink was dry. This held true even in very red top tone blues.

• GLOSS RECORDER WITH AUTOMATIC STANDARDIZATION. Richard S. Hunter. *Paper Trade Journal* 127, No. 12, September 16, 1948, pp. 51-53 (3 pages). A 75° gloss exposure head has been designed for gloss measurements. In the laboratory this head may be used with a slide-wire measuring device. This same exposure head may be used in the mill to give continuous records of gloss. It is operated in conjunction with a specially modified recorder of the type widely used in many process measurement and control problems. To obtain continuous accurate measurements of gloss, a method of automatic standardization using a fixed beam of light as standard was devised.

• FACTORS AFFECTING INK DRYING TIME. P. B. Mennell. *Lithographers Journal* 33, No. 11, February, 1949, p. 41 (1 page). The three main methods by which printing inks dry are: absorption into the paper, oxidation of ink vehicle, and evaporation of the vehicle. The first two, which are more important to the lithographer, are discussed. Absorption will depend on the fluidity of the ink and absorption rate of the paper. A test is described for determining absorption rate of paper. The rate of oxidation can be affected by a number of factors includ-

ing pH value of the paper, temperature of the machine room, and water.

• THE INK DRYOGRAPH. Everett Carman. *American Ink Maker* 27, No. 4, April, 1949, pp. 30, 31, 59 (3 pages). The function of the Ink Dryograph is to measure the rate of drying of printing inks on paper. The design of this instrument and the principles it involves are explained and the procedure for its use described. The Ink Dryograph has been designed to test the drying of twenty four prints simultaneously and to test each print every thirty minutes for twenty-six hours.

Paper and ink relationships

• MORE ABOUT THE DENSITOMETER. Charles F. King. *Inland Printer*, 121, No. 6, September, 1948, pp. 72-74 (3 pages). The author gives reasons for evaluating tone relationships in terms of density, and the types of instruments that give direct density readings from photographs or press sheets. The importance of paper stock and ink characteristics on contrast is stressed. Once the proper type of ink has been established for a particular stock the densitometer can be used to control the press production.

• INK AND PAPER. George Cramer. *1948 Yearbook of The American Pulp and Paper Mill Superintendents' Association*, pp. 198, 201-2, 204 (4 pages). The relationship of ink and paper is discussed, and some of the problems arising in gravure, letterpress, and lithography are pointed out. In all cases it is desirable that the ink maker get a sample of the paper to be run on a specific job, so as to be able to fit the ink to the paper. The surface condition of the paper is important. Loose material on the surface can be eliminated by the use of a vacuum brush on the front end of the press. The greatest difficulties are encountered in lithography. Paper density seems to be important. Non-drying may be due to lack of drier in the ink, too much surface drier added, or to chalking. Since the process uses moisture, water solubles will tend to accumulate on the blanket. Untreated starch in paper should be avoided for that reason. Sometimes the ink, the paper, and the acid in the fountain promote adverse chemical reactions. A pick of seven or eight is desirable. An excessive amount of water will emulsify the ink. There have been improvements lately in regard to gloss ink, and new resins have been used successfully in this connection.

IV. LITHOGRAPHY—GENERAL

Technical discussions

DEFINITIONS OF PH SCALES. Roger G. Bates. *Chem. Revs.* 42, 1-61 (1948). A discussion of the different methods of establishing pH values. Because several pH scales are now in use, the author recommends that all published pH data be accompanied by a statement of the type of cell used, and the pH value assigned to the standard buffer used to calibrate the pH meter should be specified. *Chemical Abstracts* 42, No. 11, June 10, 1948, p. 3644.

• COLOR ORGANIZATION IN THE OSTWALD SYSTEM. Walter C. Granville. *American Ink Maker* 26, No. 6, June, 1948, pp. 29-31, 47, 49 (5 pages). The Ostwald system of color organization, based on an equilateral triangle, is described. Factors to be considered in developing color harmonies

and the applications of this color system to printing are discussed. Illustrations are given.

• PRIMARY PROCESSES IN PHOTO-OFFSET LITHOGRAPHY. Kenneth R. Burchard. *American Printer* 126, No. 5, May, 1948, pp. 43-45 (3 pages). In the second of a series of articles on primary processes in photolithography, the author discusses diaphragm controls, including formulae and tables; the steps in making the halftone negative; and preparation of the printing plate.

• EGG ALBUMIN–STANDARDIZATION OF LABORATORY CONTROL TESTS FOR TECHNICAL EGG ALBUMIN. Frank S. Lombardo. *National Lithographer* 55, No. 6, June, 1948, pp. 26, 27, 87, 88, 90, 92 (6 pages). Specifications are outlined for technical egg albumin. These include tests for solubility, viscosity, and adulterants. In addition, samples should be checked for color and indication of bacteriological decomposition.

• A TEST TO HELP AVOID STRINGY GUM ARABIC. *Modern Lithography* 16, No. 6, June, 1948, p. 51 (1 page); *National Lithographer* 55, No. 6, June, 1948, p. 48 (1 page). The classification of gum arabic into the different grades is based largely on its source, color, and freedom from woody materials and dirt. The preferred grade for lithography is "select gum arabic sorts" which consists of fairly uniform clean lumps ranging from pale yellow or buff to nearly white. Instructions are given for testing lump gum arabic for "stringiness" before it is used. A viscometer should be used for the detection of gelatinous material in powdered gum arabic. A method is suggested also for dissolving gum arabic.

• WHAT IS BEST FOR "WASHING UP"? *Inland Printer* 121, No. 4, July, 1948, p. 78 (1 page). There are two distinct types of detergents commonly used–volatile solvents and alkali cleaning agents. A third type, known as "wetting agents" has had only limited use so far. Advantages and disadvantages are listed for gasoline, naptha, mineral spirits, kerosene, carbon tetrachloride, metasilicate of soda, and other detergents.

• ONE WAY TO INCREASE PRODUCTION AND PROFIT – BY PROPER ROLLER CARE. *Modern Lithography* 16, No. 9, September, 1948, pp. 40-41 (2 pages). The importance of clean rollers and troubles which may be caused by improper roller care are discussed. To keep rollers clean they should be cleaned daily with the customary washup solvent, and, in addition, should all be removed from the press periodically for the purpose of removing whatever film has started to form on the surface. Methods are suggested for removing this film.

• NEW PRODUCTS AND PROCESSES. *Modern Lithography* 16, No. 10, October, 1948, pp. 49, 51-2, 55 (4 pages). The new Kodak Process Ektar Lens, the Kemart Highlight Fluorescent Process, the precoated plate recently developed by Harold M. Pitman Company, a sandblast graining machine, and two new improved Kodak plates for color separation are among the topics discussed at the NAPL Convention in Cincinnati, September 15-18.

• AGAIN LINE PRODUCTION OF GERMAN OFFSET PRESSES (In German). *Der Polygraph* 1, No. 14, September 20, 1948, pp. 150-1 (2 pages). The manufacturing program of the firm Faber & Schleicher in Offenbach am Main is outlined and their different types of offset presses quoted. The small offset automat the "Roland-Junior," sheet size 35 x 50 cm has an output of 8000 sheets per hour. The single-color offset press "Roland Parva" is made in three sizes, 50 x 70, 56 x 85, and 61 x 86 cm, output 7000, 6500, and 6000

sheets per hour repectively. The "Roland-Ultra" can be delivered as one- or two-color press, sheet sizes from 64 x 95 to 89 x 126 cm, output 6800 and 6500 per hour respectively.

• GETTING UP COLOR. *American Pressman* 58, No. 8, July, 1948, pp. 42, 44 (2 pages). A step-by-step description is given of a procedure by which the pressman can get up color quickly with a minimum of waste.

FOUNTAIN SOLUTION ROLLER. William Craig Toland, Munroe H. Hamilton, assignors to William Craig Toland. *United States Patent 2,453,735* (November 16, 1948). As an article of manufacture a roller for use in planographic printing, said roller being covered with a water-swellable material which includes a water-soluble dibasic acid. *Official Gazette* 616, No. 3, November 16, 1948, p. 691.

• THE RELATION OF REPRODUCTION AND THE FEEDING OF INK IN OFFSET PRINTING. (In German). Fritz Prause. *Der Polygraph* 1, No. 15, October 5, 1948, pp. 162-3 (2 pages). In screen reproduction there is a gradual broadening of the dot from the positive to plate and final print. This should be taken into account by correcting tone values. If dots are viewed by transmitted light they appear smaller than they actually are due to an optical illusion. To avoid this it is recommended to apply a chalk solution to the emulsion side of the film which enables viewing the dots from the other side by reflected light. The chalk coating can easily be washed off afterwards. It is advisable to make proofs on the press rather than on the proof press, and it is the task of both photographer and platemaker to furnish the pressman with plates where the size of the dots is such as to permit him to feed ink sufficient for good coverage.

• METAL DECORATING, ITS MACHINES AND AUXILIARY EQUIPMENT. (In German). R. Groth. *Deutscher Drucker* 47, No. 9, June, 1941, pp. 343-7 (5 pages). The preparation of the printing form, platemaking by hand transfer and photographic methods, and printing from stone or zinc on flat-bed presses, as well as one- and two-color rotary presses are discussed. Illustrations of different presses are contained in this article, and the running of a job is described. Inks in metal decorating, and the varnishing and drying of tin plates likewise are covered.

• SOMETHING ABOUT WEB OFFSET PRINTING (In German). *Deutscher Drucker* 47, No. 9, June, 1941, p. 342 (1 page). Instructions are given on how to adjust plate and blanket cylinder, how to treat and set ink rollers, cover dampeners, mount the plate, and prevent tearing of the paper during the run.

• INCREASING COLOR INTENSITY IN OFFSET PRINTING. In German. M. Hartmann. *Der Polygraph*, November, 1948, p. 195 (1 page). An ink manufacturer deals with the question whether proofs should be made on the proofing press or the offset press. There is bound to be some difference in color intensity between them since an ink of greater consistency has to be used on the proofing press to obtain a clear print not affected by dampening water. Using the same ink on the offset press would result in picking. This could be avoided by adding Laketine to the ink used on the proofing press. Moreover, the machine plate should have a sharper dot. It is, therefore, concluded that it is better to make a proof on the press where the job is going to be run.

PRINTING PLATE WHIRLER. Fred A. Hacker, assignor to American Type Founders, Inc. *United States Patent No. 2,455,761* (December 7, 1948).

Apparatus for making photolithographic printing plates and the like, which comprises a cabinet having a compartment therein, a horizontal rotary plate whirler mounted on the bottom of said compartment, a motor for driving said whirler, an electrical heating element below the plane of said whirler and within the lateral confines thereof, air inlet openings in the bottom of said compartment adjacent said heating element, fan blades on the lower surface of said whirler for circulating the air, and air outlet openings in said cabinet above the plane of the whirler. *Official Gazette* 617, No. 1, December 7, 1948, p. 223.

MODERN 24-SHEET POSTER PRODUCTION. William E. Doole. *Can. Printer Publisher* 57, No. 9; 38-9 (September, 1948). More than 85% of the large billboard posters are done by lithography, which offers relatively low cost reproduction, special technical facilities, and speedy press runs. Most of them are printed on 12 large sheets, the name 24-sheet poster now being a misnomer. Canadian billboards or panels are 102 x 240 inches; the copy must be in correct ratio, perhaps 15 x 35 inches. After the original reaches the lithographer, the copy is laid out in sections to correspond to the large sheets which will eventually make up the billboard. The copy is photographed, and color-separation negatives made. The negatives in turn are photographed to make halftone screen positives, from which are made the contact negatives that are projected onto the screen plate. The 133-line screen is enlarged to 18 dots to the inch The plate is clamped to the press cylinder and printed, with frequent checks by the artists. After printing, a test paste-up is made, after which the sheets are delivered to the finishing department, where they are jogged, trimmed, and cut. After being folded and collated, they are gathered into complete units and numbered in proper sequence for convenience in the final mounting. Illustrations show the steps in production. *Bulletin of the Institute of Paper Chemistry* 19, No. 3, November, 1948, p. 188.

GRAINING APPARATUS. John M. Simpson. *United States Patent No. 2,458,108* (January 4, 1949). A grinding apparatus or the like comprising a main supporting frame, a sub-frame hinged at one end to said main frame, means carried by said main frame for movably supporting the opposite end of said sub-frame and for imparting thereto an up and down movement, a graining container, flexible means fixed on said sub-frame supporting said graining container on said sub-frame and means for reciprocatingly vibrating said graining container in a horizontal plane on said supporting means with respect to said sub-frame. *Official Gazette* 618, No. 1, January 4, 1949, p. 212.

* TAKE OFF FROM BUFFALO. *National Lithographer* 56, No. 1, January, 1949, pp. 28-29, 72, 74, 76 (5 pages). This is the first in a series of interesting lithographic careers. John A. Eckert, president of Columbia Planograph Company, Washington, D. C., is the subject of this article. He started his career in 1884 running an ink mill and has seen lithography progress from the days of stone lithography to present high speed operation.

* LITHOGRAPHY A QUALITY PROCESS. Charles F. King. *Inland Printer* 122, No. 5, February, 1949, pp. 51-2 (2 pages). Greater study of the techniques of quality lithographic printing is urged. Stress is laid on the need for the craftsmen to better understand tone reproduction. Many of the difficulties start in the camera department. Illusion of brilliance and detail is obtained by contrast in the middle tones and shadows, and not in highlight drop-outs. Lithography is not a cheap substitute for doing a job that could be done better by letterpress. It is equal or superior in quality to any other print-

ing process.

* THE WEB OFFSET PRESS. *National Lithographer* 56, No. 2, February, 1949, pp. 26-28, 85 (4 pages). The web offset press is a reality. Advantages are: more speed; several operations can be performed at once—imprinting, punching, numbering, making cross and vertical perforations, and folding; humidity does not interfere with register; small cylinder gap; no gripper; plates can be changed more quickly. There are size restrictions on this press. A lithographer should be sure of a market before investing in this expensive machine. Manufacturers are listed.

* THE HISTORY OF PHOTOGRAPHIC TEXT COMPOSITION. H. R. Freund. *PSA Journal* 15, No. 1, January, 1949, pp. 62-64 (3 pages). The need for a photographic type setter is expounded and eleven of the sixty machines intended to fulfill the need are described. The requirements of such a machine include accurate spacing and alignment of characters and lines, simple adjustment of line spacing and width, automatic justification, semi-automatic method of correcting errors, large capacity of type size and face, speed, ruggedness, and dependability. The Intertype Fotosetter described is similar to the linotype. The master character is a photographic image imbedded in the side of the matrix. A line of these matrices is assembled by keyboard operation, viewed for corrections and corrected, justified and photographed letter by letter while the film is automatically moved through the camera. An eight lens turret provides size changes; there is a capacity of four fonts. After being photographed the matrices are returned to the magazine. The machine has been field tested at the Government Printing Office since 1946.

GRAINING MACHINE HAVING A VIBRATORY TABLE. Pieter Hendrik van den Hove, Jr. *United States Patent No. 2,466,516* (April 5, 1949). In a graining machine having a vibratory table and means for imparting a vibratory motion to the table, the combination of a stationary frame located under the table, depending means secured to the table and projecting below the top of said frame, and nonrigid means secured to said frame and to said depending means thereby movably suspending the table from said frame *Official Gazette* 621, No. 1, April 5, 1949, p. 254.

* COLOR REPRODUCTION BY THE PHOTO-LITHO PROCESS. D. C. Gresham, *Penrose Annual*, 1949, Volume 43, pp. 128-130 (3 pages). New developments in color reproduction by the photo-litho process are discussed. These include masking procedures to improve color saturation and contact screens to improve tone rendition.

* EVALUATION AND ANALYSIS OF PRINTING RESULTS. D. J. Andella. *Paper Trade Journal* 128, No. 4, January 27, 1949, pp. 23-27 (5 pages). The process of making plates and preparing copy for the press is outlined together with the properties required of paper to produce fine printing.

* NEWSPAPERS BY OFFSET. DeWitt G. Manley. *Modern Lithography* 17, No. 3, March, 1949, pp. 26-30, 95, 97 (7 pages). A list is given of newspapers in the United States now being published successfully by offset lithography and a few of the outstanding ones are cited. The operations involved in producing an offset newspaper are described and both the advantages and disadvantages of using offset for this purpose are pointed out.

* NEW OFFSET DAMPENING ROLLER WASH BY GPO. *Printing Magazine* 73, No. 7, March, 1949, p. 61 (1 page). The following formula is given for a solution to clean offset dampening rollers: Pine Oil, 25.5%; Varsol, 17.0%; Isopropanol (isopropyl alcohol), 18.0%; Sodium Hydroxide solution (30%), 6.5%; Refined Tall-Oil, 16.0%; Water, 17.0%. The Government Printing Office reports this solution as working entirely satisfactorily.

* INTRODUCE NEW FOUR-COLOR DRY OFFSET PRESS. *Modern Lithography* 17, No. 4, April, 1949, pp. 90-91 (2 pages). A new four-color offset press, designed to use high etch relief, dry offset plates, is being introduced by Hires, Castner and Harris, Inc., Philadelphia,

Pa. The press is a combination web- and sheet-fed. The paper feeds from a roll and is sheeted before entering the printing units. Paper up to 41" wide can be printed with sheets 23" to 38" long. Each plate cylinder can be moved backward, forward, or sideways to secure register. Plates for the press are .032" magnesium. The design is applied with cold top enamel. After development the plate is given several "bites" with nitric acid, until the non-image areas are etched about .015". Screens up to 150 line can be used.

* OFFSET RUBBER BLANKETS. A. G. Hope. *Paper and Print* 22, No. 1, Spring, 1949, pp. 76, 77 (2 pages). Maintaining the offset rubber blanket in the condition which is most conductive to good receptivity and transfer of the ink film from the plate to the paper is most important for good reproduction, especially with coated paper printing. Great care should be used in selection of a blanket wash as some solvents are detrimental to the ingredients of which the blanket is made and may cause tackiness. With coated papers it is important to select a paper with adequate resistance to the moisture film on the rubber blankets used. An enamel type of coated paper has been specially designed for the lithographic process. It is most desirable for clear, sharp, and faithful reproduction. An alternative type of letterpress coated paper is available which may be utilized for short runs but this paper does not possess the waterproof characteristics necessary to the offset method of reproduction.

* BICHROMATE IN THE GRAINER. *Research Progress* 1, No. 10, November-December, 1949, p. 3 (1 page). A two per cent solution of sodium bichromate has been found useful in the grainer for the prevention of the oxidation of zinc and aluminum plates, and for retarding the rusting of the steel marbles. Ammonium bichromate should not be substituted for sodium bichromate. Sodium bichromate does not protect well in the presence of trisodium phosphate. Plates are given a preliminary graining with trisodium phosphate, then the marbles are dumped and the tubs and marbles washed thoroughly with water. Then the graining is completed with the 2% sodium bichromate solution.

* THE SYSTEM LINDMARK. W. H. Grealey. *British and Colonial Printer*, 144 No. 1066, April 8, 1949, p. 276 (1 page). A brief description of the new Swedish graining apparatus, "System Lindmark," which makes use of a rotating drum to which the plates are attached for sand blasting.

* SUMMARIES OF PAPERS PRESENTED AT TALI MEETING. Paul W. Dorst. *Modern Lithography* 17, No. 6, June, 1949, pp. 68-70 (3 pages). Summaries are given of five of the papers presented at the first annual meeting of the Technical Association of the Lithographic Industry in Chicago, April 12-13. These papers are as follows: "A Motor Driven Carbon Arc for the Graphic Arts Industry," "Lens Flare in Process Cameras," "Method of Evaluating Resolution Characteristics of a Process Lens," "Tone Reproduction on the Press," and "Gas Black and Boiled Oil." Summaries of the other thirteen papers were presented in May issue of *Modern Lithography*.

Lithographic research

* RESEARCH PUTS LITHOGRAPHY IN LEAD IN GRAPHIC ARTS FIELD. *Lithographers Journal* 33, No. 2, May, 1948, pp. 8-9 (2 pages). Report of Chicago Lithographic Technical Foundation meeting April 15-17. Description is given of tour through LTF Laboratory, and the work conducted in each department. Extended discussion periods were held during this 3-day meeting and problems and prospects of the industry were discussed. Among topics of interest were vapor blast graining, and the bi-metallic plates developed by Time, Inc., and Roberts and Porter.

* GLUCOSE - PROTEIN REACTION IN DRIED EGG ALBUMIN. R. W. Kline and G. F. Stewart. *Industrial and Engineering Chemistry* 40, No. 5, May, 1948, pp. 919-922 (4 pages). From experimental evidence, it is concluded that glucose in egg albumin reacts with the protein, similar to the reaction between amino acids and glucose, found by Maillard. This reaction is followed by other reactions, one producing fluorescence and one leading to insolubility of the protein. When amino acids were added to an egg-albumin and glucose mixture, the solubility loss of the egg albumin was decreased considerably, but the fluorescence was increased greatly. This indicates that glucose reacts much more rapidly with amino acids that it does with egg proteins. Lysine and glycine were the best amino acids for retaining solubility of the egg albumin. It was proved that a

TRADE ASSOCIATION INDUSTRIAL RESEARCH. Pamphlet of United States Department of Commerce, Superintendent of Documents, Washington 25, D. C.—25 cents. A survey of trade and other associations carrying on technical and scientific research in 1947. The associations are listed and their facilities and methods of conducting research are described. Of special interest is the chapter on management of research, covering organization of technical and research committees, project selection and control, and publication and promotion of research findings. The benefits of association scientific and technical activities to government and industry are discussed.

RESEARCH IN KALAMAZOO: NEW COATING PROCESS BEING STUDIED. Anon. *Pulp and Paper* 22, No. 8: 26-7 (July, 1948). Brief reference is made to the research activities at the Graphic Arts Laboratory in Kalamazoo, Michigan which is operated by Time, Inc., with 16 members on the staff. A new clay dispersion has been developed which resulted in clay being shipped in tank cars in slurry form, eliminating the ball-mill operation at the coating mill. Ink drying experiments, the action of physical stresses on paper in printing presses, and offset printing with the use of heat-set inks are some of the problems being studied. A new process for coating paper using a synthetic product is still in the experimental stage; a process for defibering and deinking waste paper has been developed and is now being introduced in a number of plants. *Bulletin of the Institute of Paper Chemistry* 18, No. 12, August, 1948, p. 864.

* RESEARCH 'ROUND THE WORLD. Karl Davis Robinson. *Modern Lithography* 17, No. 1, January, 1949, pp. 45, 47, 97 (3 pages). Lithographic research in Britain, Sweden and throughout the world is discussed. The trend appears to be toward exchange of data and cooperation between the various countries. The Lithographic Technical Foundation has cooperative arrangements with technical foundations in England, France, Holland, Sweden, and New Zealand, and is exchanging publications for ones from England, France, Russia, Holland and Sweden. Requests have been received for permission to translate Foundation publications into 6 languages, and LTF now has members in 18 foreign countries.

* COOPERATIVE RESEARCH—AN ECONOMIC NECESSITY. Don H. Black. *Graphic Arts Monthly* 21, No. 2, February, 1949, pp. 66, 68, 70, 72, 74, 76, 78 (7 pages). The dividends paid by research in the lithographic industry are discussed. The big part the Lithographic Technical Foundation has played in the growth of lithography over the past twenty-five years is pointed out. LTF pioneered pH control, control of plate exposures, effects of relative humidity, bichromated gum desensitizing treatments, Lithotine, dilute-Cronak and Brunak, and cellulose gum as a desensi-

tizing agent. Also through LTF's efforts the industry has better offset papers, inks, and blankets as well as a better knowledge of how to use them. The problems yet to be solved in the graphic arts industry, however, make continued research a necessary investment.

• TALI PAPERS COVER WIDE SUBJECT RANGE. Paul W. Dorst. *Modern Lithography* 17, No. 5, May, 1949, pp. 82-87 (6 pages). The first thirteen papers given at the first annual meeting of TALI in Chicago, April 12-13, are summarized and the discussion following each paper presented. These papers deal with research on platemaking, paper and ink, and color and color reproduction. The remaining five talks, together with discussion, will appear in the June issue of *Modern Lithography*

V. GRAPHIC ARTS—GENERAL

Technical processes

• HALFTONE AND TRICOLOR PRINTING BY THE SILK-SCREEN PROCESS. F. W. Mackenzie. *Process Engravers Monthly* 54, October, 1947, pages 254, 257 (2 pages). Although the actual halftone and color work done by silk-screen methods to date does not compare favorably with that produced by other methods, new types of screens have been evolved that may improve the results if they are allied with machine printing. An obvious outlet for silk-screen halftone and color work is in textile printing. The main problem of the photomechanical worker in the production of negatives and positives for screen-printing is in correlating his work with that of the screen-printer. Techniques are being developed which are closely associated with photo-engraving. In regular production with carbon tissue, the tonal or color correction must be done on the photographic negatives or positives, but by a new method, fine etching is not only possible but necessary. Hence, after the first proofs, corrections may be made without remaking the screens. The printing of the highlight dots in recently inspected work by the carbon tissue process is said to have been needle sharp as a result of printing in a special, transparent lacquer. A silver halide emulsion could be used in place of the customary bichromated-colloid coating in the silk-screen process. The stencil image is produced by tanning development. It is believed that short runs of posters could be produced economically and well by silk-screen methods. *Monthly Abstract Bulletin* 34, No. 3, March, 1948, p. 100.

ANNOUNCE FAIRCHILD LITHOTYPE. *Modern Lithography* 16, No. 5, May, 1948, p. 86. The Fairchild Lithotype, a new type composing machine, is electrically driven and types standard printer's type in a great variety of faces and sizes. It uses any standard Monotype face in sizes from 6 pt. to 24 pt. and produces finished proofs on paper or on thin metal offset plates for direct image work. The type is in a light magnesium wheel, and the print is through a carbon ribbon. The first Lithotypes will be available for field testing in a few months. Manufactured by Fairchild Camera and Instrument Corporation, 80-06 Van Wyck Boulevard, Jamaica 1, New York.

• NEW TRANSFER PRINT METHOD DEVELOPED. *Plastics*, February, 1948; *Share Your Knowledge Review* XXIX, No. 8, May, 1948, pp. 16-17 (2 pages). New method of reproducing printed matter in black and white and in full color on plastics film has been developed by Joseph Mrazek,

New York. In essence, process consists of transfer of a pattern printed on high-grade coated paper to cellophane and other cellulosic films, vinyl, rubber hydrochloride, butyral and many other types of thin, unsupported film. The printed paper is removed from the press in roll form and run along a belt for calendering with a liquid film-forming resin, which must be compatible with the ink used in printing the paper. After drying, the film is stripped from the paper, leaving it blank, printed impression having been transferred to film. This process is said to be economical, and sample prints show sharp definition and an almost three-dimensional effect.

ELECTRONIC ENGRAVING SYSTEM. Anon. *Electronics*, 1947, 156, August, 1947. A brief account of a method, developed by the Fairchild Camera and Instrument Corporation, whereby a photographic print is scanned and the response of a photoelectric cell is caused to control an engraving machine to produce, on a plate, an image in the equivalent of the conventional half-tone dot pattern. *Photographic Abstracts* XXVIII, Part 1, 1948, No. 109, page 29.

• MEASUREMENT OF ADHERENCE OF ORGANIC COATINGS TO METAL SURFACES. Henry Green and Theresa P. Lamattina. *Analytical Chemistry* 20, No. 6, June, 1948, pp. 523-527 (5 pages). A description of the Interchemical Corporation adherence tester, for measuring the adherance of organic coatings to metal surfaces. The apparatus consists of a knife blade which is pulled horizontally across the coated plate. The pull required to remove the organic coating is recorded on a scale.

• SIZE VARIATIONS IN DIE CUT LABELS. Robert F. Reed. *Modern Lithography* 16, No. 6, June, 1948, pp. 32-34, 94-5 (5 pages). Experimental studies on the problem of size variation in die-cut labels were conducted recently at the Lithographic Technical Foundation. The causes of variations and means of minimizing them are discussed.

• OFFSET LITHOGRAPHY AND LETTERPRESS—THE PERFECT TEAM. J. Tom Morgan. *Canadian Printer and Publisher* 57, No. 9, September, 1948, pp. 44, 54, 56, 59 (4 pages). The six main factors involved in letterpress reproduction and offset lithography are the same: copy, camera, plates, paper, inks and presswork. However, in the two processes, the inks, paper, plates, press and camera work are quite different. These differences are discussed. Suggestions are given as to when letterpress and when lithography should be used.

• GRAVURE COLOR SEPARATION AND PLATEMAKING. Allen C. Black. *American Printer* 127, No. 4, October, 1948, pp. 35-37 (3 pages). A summary of the various steps in modern gravure color printing. The article covers preparation of the photographic work, highlighting, color correction, Dultgen and conventional screen work, etching of the cylinders, and proofing.

METHOD OF AND MEANS FOR PRINTING MULTICOLOR IMAGES BY ELECTRIC DISCHARGE. William C. Huebner. *United States Patent No. 2,451,288* (October 12, 1948). The herein described improvement in the art of producing a predetermined printed design upon a surface of print receiving material and which includes moving said material relative to an ink discharging element with said surface of the material spaced therefrom, creating an electro field of force extending from said element through said material and simultaneously causing certain predetermined lines of force of said field of force to deposit ink directly on said surface of the material in areas corresponding to the image to be printed thereon while intercepting the remaining lines of force of said field

of force adjacent the opposite and remote surface of the material to render the same ineffective and thus to cause no ink to be deposited on the remaining non-image areas of said surface of the material. *Official Gazette* 615, No. 2, October 12, 1948, p. 457.

• XEROGRAPHY. MacD. Sinclair. *Printing Equipment Engineer* 77, No. 2, November, 1948, pp. 21-25 (5 pages); *Printing Magazine* 72, No. 11, November, 1948, pp. 60-61 (2 pages). *American Pressman* 58, No. 12, November, 1948, pp. 36-9 (4 pages); *Modern Lithography* 16, No. 11, November, 1948, pp. 57-58 (2 pages). The new dry printing process, Xerography, is described. This process makes use of static electricity and a dry powder to produce line or continuous tone pictures, type-composed reading matter, engineering drawings, documents, copying of letters and to print on high speed rotary presses. In the process, the usual photographic sensitized papers and chemicals are eliminated, and the standard types of printing inks are also eliminated. The steps in this process are discussed and illustrated, including sensitizing, exposing, developing plate, making permanent print on paper from image on plate, and fixing the image.

RUST PREVENTION IN PACKAGING. *Patra Journal* 11, No. 1, January, 1948, pp. 18-19 (2 pages). Of interest to packagers and printers is the discovery that the corrosion of steel and some other metals under humid conditions can be prevented by wrapping them in paper impregnated with a 5% solution of sodium benzoate. The various benzoic acid esters are similarly effective in vapor form when they are used to impregnate paper. The chloride content of the paper should not exceed 0.1% by weight. The use of such material may result in the development of wire-stitched boxes and books, paper labels for tins, and simple packing for metal articles, which will not be disfigured by rust stains. *Bulletin of the Institute of Paper Chemistry* 19, No. 2, October, 1948, p. 83.

MOIRE PATTERNS IN AN IMPRESSION OF MANY COLORS. D. Tollenaar, *Sci. ind. phot.* 16, March-April, 1945, pages 70-1. Crossline screens produce not just a single moiré pattern, but a whole series of them. The higher-order patterns are much less intense, but nevertheless cause trouble. In two-color printing, the third-order pattern may be visible.

In three-and four-color printing, the most troublesome moiré pattern is caused by the interference between one screen and a moiré pattern produced by two of the others. It can be rendered invisible by very accurate adjustment of the screen angle. *Monthly Abstract Bulletin*, Kodak Research Laboratories 34, No. 4, April, 1948, p. 145.

• PHOTO-ENGRAVING IN 1947. H. M. Cartwright. *Photographic Journal* 88A, April, 1948, pp. 95-96 (2 pages). A brief review of some of the developments in photo-engraving, lithography, and photogravure during 1947.

• NEW PHOTO REPRODUCTION PROCESS SHOWN BY BATTELLE INSTITUTE. *Chemical and Engineering News* 26, No. 44, November 1, 1948, pp. 3264-3265 (2 pages). A completely "dry" method of photocopying has been developed at Battelle Memorial Institute. The process is called "Xerography." A polished aluminum plate coated with a photo conductive material is given a positive surface charge with a "corona spray apparatus." Exposure to the copy in the camera causes positive charges to disappear in areas exposed to light, leaving no charge on the image areas. The plate is dusted with a negatively charged powder which adheres only to the remaining charged areas. When a

positively charged white paper is brought into contact with the plate, the powder is attracted from the plate to the paper, forming a black image on the paper. The paper is heated a few seconds to fuse the powder and form a permanent print. At present the process is confined to line work.

•PRINTING ON KROMEKOTE. *Share Your Knowledge Review* 30, No. 4, January, 1949, pp. 29-33 (5 pages). Kromekote is an entirely new type of paper. It is a cast coated-one-side paper developed for use on work requiring high finish and brilliant colors. These results can be obtained without the use of lacquer or varnish. It is highly absorbent to printing inks and has plenty of cushion. Kromekote is made in the following grades: label, litho, box wrap, cover, post card, gummed, blotting. No special press equipment is necessary to handle this paper; however, certain precautions should be taken for best results. These precautions are discussed along with makeready and special inks required, and the printing or embossing of Kromekote.

• NON-OFFSET SPRAY MATERIALS. *American Pressman* 59, No. 1, December, 1948, pp. 32, 34 (2 pages). Members of the Graphic Arts Spray Manufacturers group are listed. The functions of this group and the standards set up by it for its members' non-offset spray materials are discussed.

PRINTING APPARATUS. William C. Huebner. *United States Patent 2,460,504* (February 1, 1949). Removable press cylinder and means of removing it from press. *Official Gazette* 619, No. 1, February 1, 1949, p. 165.

•TECHNOLOGY AND RESEARCH. *Printing Equipment Engineer* 77, No. 4, January, 1949, pp. 23-28 (6 pages); *Printing Magazine* 73, No. 1, January, 1949, pp. 72-74, 106 (4 pages). Approximately 260 persons attended the meeting of the Research Committee of Printing Industry of America in Columbus, Ohio, on December 6 and 7. The necessity for intensified scientific research in the commercial printing industry was brought out by the lectures and demonstrations. This group decided to proceed with the organization of a commercial printing industry research coordinating society and the organization of an overall technical society.

PRINTING AND MECHANISM THEREFOR. Goss Printing Company, Ltd. *British Patent No. 604,012. Res. Assoc. Brit. Rubber Manufrs. Summary Current Lit.* 1948, 26 (10) 828. A method of printing electrically is described in which transfer of ink from an ink carrier to the sheet being printed is effected by developing a potential difference between the carrier and the sheet and controlling the current flow at the instant of ink transfer. The printing mechanism for carrying out the process includes a roller having a surface of electrically conductive rubber. *Printing Abstracts* 3, No. 12, December, 1948, p. 450.

• INDUSTRIAL APPLICATIONS OF THE SODIUM SILICATES. Reynold C. Merrill. *Industrial and Engineering Chemistry* 41, No. 2, February, 1949, pp. 334-345 (12 pages). Combining detergent properties with freedom from attack on most metals, the sodium silicates can be used as effective metal cleaners of Al, Cu, steel, and brass. The protective action of the silicate is apparently due to an invisible film of silica, or metal silicate, which does not interfere with electroplating.

APPARATUS FOR MULTICOLOR PRINTING WITH ELECTRO LINES OF FORCE. William C. Huebner. *United States Patent No. 2,408,143* (September 24, 1948). In printing apparatus, a movable member having image areas permeable to electro lines

of force and non-image areas impermeable thereto, a member for supporting print receiving material between it and said movable member; means for inking said image areas while maintaining the non-image areas free of ink and comprising an ink discharge element located on one side of said movable member, means for supplying ink to said element, an attraction element located on the opposite side of said movable member, means for connecting said elements to a source of high potential electric energy to create a field of force with the lines of force thereof intercepted by the impermeable non-image areas but passing through the permeable image areas and acting to deposit ink on said image areas; and means for transferring the deposited ink from said image areas to said material and comprising a repulsion element operatively associated with said movable member and located on one side of said material, an attraction element opertively associated with said second member and located on the opposite side of said material, and means connecting said repulsion element and said last mentioned attraction element with a source of high potential electric energy to create a field of force in which the lines of force pass through the permeable inked image areas of said movable member and act to transfer the ink from said image areas to correlated areas of said material. *Official Gazette* 590, No. 4, September 24, 1948, pp. 613-14.

* PHOTOSENSITIVE GLASS. S. D. Stookey. *Industrial and Engineering Chemistry* 41, No. 4, April, 1949, pp. 855-861 (6 pages). Photosensitive glass, a new type of photographic medium, has reached the commercial stage. This material makes it possible to print colored photographic images within glass articles. The photographic process consists of two steps: exposure with ultra violet light through conventional negatives and development by heat treatment. Various colors may be produced. The image is three dimensional. Extremely fine grained images are formed. In fact practically no scattering of light occurs through such an image. A possible use is as a method of producing halftone screens.

* NEW COLOR MEASURER OF GENERAL ANILINE CALCULATES VALUES IN 2½ MINUTES. *Paint, Oil, and Chemical Review* 112, No. 8, April 14, 1949, p. 41; *Instruments* 22, No. 4, April, 1949, pp. 329-30 (2 pages). A new color measuring device has been announced called the General Aniline-Librascope Tristimulus Integrator. This instrument is designed for use with the Hardy General Electric Spectrophotometer. It analyzes the reading of the spectrophotometer, correcting it for wave length distribution of the light used, and the wave length response of the average eye, to give three numbers, known as tristimulus values, which are a unique specification of the color of the sample. Calculations require only 2½ minutes.

* COMPARISONS OF COLOR SYSTEMS WITH RESPECT TO UNIFORM VISUAL SPACING. Robert W. Burnham. *Journal of the Optical Society of America* 39, No. 5, May, 1949, pp. 387-392 (6 pages). A comparison of 10 color systems (the ICI xy diagram and 9 transformations of it) for the quality of uniform visual spacing. Sample included 20 Munsell hues of value 6 and chromas 4 and 6. Results are given in order of closest average approximations for both hue and chroma. The Saunderson-Milner zeta projection ranked first; the Scofield-Judd-Hunter was sixth. For the Saunderson-Milner plot the r.m.s. deviation from uniform spacing is 1 JND, the greatest deviation is 6 JND. Since colors of greater saturation would show greater deviations from uniform spacing, the author concludes that the best known approximations do not yield visually accurate spacings and that the Munsell renotation is still the best available criterion.

LOOKING AHEAD TO NEW EQUIPMENT AND NEW DEVELOPMENTS IN GRAPHIC ARTS RESEARCH. G. C. Compton. *Graphic Arts Education*, 1948, 26 (1), 13-25 (Fall). The following developments are discussed: the Varityper, IBM and Lithotype, Justowriter, Fotosetter, Type-O-Writer, Teletypesetter, curved photo-engraved plates,

magnesium alloy plates, bimetallic plates, the Fairchild Photoengraver, tubular printing and the Opti-Chek. *Printing Abstracts* 4, No. 3, March, 1949, p. 76.

* NEW HYDRION DEMINERALIZER FOR THE GRAPHIC ARTS. *American Photo-Engraver* 38, No. 10, May, 1949, pp. 50-52 (3 pages). A new development to convert ordinary tap water to the chemical purity of distilled water has been announced by A. E. Tomkin & Company, 1828 Columbia Road, NW, Washington 9, D. C. No heat or power is involved. Any tap water can be purified merely by its passage through the Hydrion Unit which is attached directly to the water faucet.

* NOW—A DEHUMIDIFIER FOR THE LABORATORY. *The Laboratory* 18, No. 5, pp. 129-130 (2 pages). The Fisher Scientific Company announce a laboratory dehumidifier. It is effective in any closed area of 8000 cubic feet or less. Under extremely humid conditions it will remove 12 to 14 quarts of water in 24 hours. A fan circulates air through the unit, and water is removed from the air as it passes over cooling coils. The water removed collects in a drain pan on the floor. The unit is 14 inches in diameter and 34 inches high and costs $149.75.

SURFACE-ROUGHNESS COMPARATOR. *Instruments 22*, No. 5, May, 1949, p. 411, A new instrument for measuring surface roughness called the "Pico Surface Comparator" has been developed by the Merz Engineering Company, Indianapolis, Indiana. It checks the surface against an approved sample. Readings are taken in 5 seconds by pressing the head against surface, and reading a meter. The apparatus operates on any 100-volt, 60-cycle line.

THE WATER - SOLUBLE GUMS — THEIR BOTANY, SOURCES AND UTILIZATION. C. L. Mantell. *Econ. Botany* 3, No. 1: 3-31 (January-March, 1949). The article is an abstract of the author's book "The Water - Soluble Gum," New York, Reinhold, 1947, and contains information on the important properties, commercial sources, and applications of a number of gums, seaweed colloids, and processed carbohydrates. *Bulletin of the Institute of Paper Chemistry* 19, No. 9, May, 1949, pp. 628-29.

Air conditioning

* TEMPERATURE AND HUMIDITY CONTROL SIMPLIFIED WITH GLASS BLOCK WINDOWS. Francis A. Westbrook. *Printing Equipment Engineer*, 76, No. 4, July, 1948, pp. 94, 108-9 (3 pages). The main advantage claimed for glass block windows over the conventional glass window is that they provide insulation against outside temperature changes which greatly facilitates the maintenance of uniform atmospheric conditions throughout the room or building. Other advantages include: they keep out dust and soot better, eliminate glare from direct sunlight, break less frequently, transmit less noise from outside, are easier to clean, and show less dirt.

NEW METHOD OF MEASURING RELATIVE HUMIDITY. F. Lightgarn. *Instruments* 20: 336-38, 1947; *Ceramic Abstracts*, 31: 70, April 1, 1948. The author describes experiments on the development of molded ceramic-type sensitive elements in which the electrical resistance alters with humidity change. The electrical resistance of most of the experimental elements so far constructed is more than 100 megohms at zero humidity and about 1 megohm at 95 R.H. The characteristic curve is a fairly straight line from 35 to 97 per cent R.H., with a knee from 35 per cent R.H. and a sharp taper down to zero humidity, but elements have been made which had linear response from 28 to 100 per cent R.H. Controlled manufacturing methods should give uniformity and improved quality. Small elements, 0.375 by 0.375 by 0.0625 inch, have had a 2-sec. response for change from 90 to 50 per cent R.H., large elements under the same conditions averaging 10 minutes. *Monthly Abstract*

Bulletin 34, No. 8, August, 1948, p. 330-1.

• AIR CONDITIONING. Russell R. Gannon. *Canadian Printer and Publisher* 57, No. 11, November, 1948, pp. 39, 52 (2 pages). All four of the following factors are involved in a true air conditioning system: (1) control of temperature, (2) control of moisture content or relative humidity, (3) control of the amount of foreign matter or dirt, and (4) control of direction and velocity of air conditioning. Relative humidity is however the biggest problem. Difficult areas to control are the plate room, pressroom, and finishing department. The two types of chemical dehumidifying . . . the type using dry absorbents such as silica gel and activated alumina, and the type using solutions like lithium chloride . . . are discussed. The other method of manufacturing weather involves the process of cooling the air to a low dew point and then reheating it to a point where the proper relative humidity is maintained.

Adhesives

• ADVANCES IN ADHESION STUDY. Charles R. Bragdon. *Interchemical Review* 7, No. 3, Autumn, 1948, pp. 79-82, 87 (5 pages). A description of the Interchemical "Adherometer" for testing the adherence of organic coatings to metal surfaces. A knife edge actually removes the film from the surface, and the force required to effect the removal is measured quantitatively on a dial.

• DEVELOPMENT OF LATEX AS A PAPER COATING ADHESIVE. E. K. Stilbert. *Paper Trade Journal* 128, No. 14, April 7, 1949, pp. 27-28 (2 pages). Of the many lattices investigated for use as paper coating adhesives, to date only Dow Latex 512K has been found to have all of the properties required to make a latex suitable for paper coating. Some of the more important of these properties are listed. Dow Latex 512K is used in the wallpaper and wallboard industries as well as in the manufacture of off-machine coated printing papers. Through the use of this material improved pigment coated papers can be manufactured that can be printed by all printing processes with standard inks. The development of machine coated papers containing Dow Latex 512K has been slower because the process is more complicated and the evaluation of the coated paper is more difficult, however present results indicate this latex may be the answer to improved machine-coated papers also.

Technical developments in Germany

• A REFLECTION PROCESS FOR REPRINTING BOOKS. Gerard L. Urban. *Modern Lithography* 16, No. 5, May, 1948, p. 38 (1 page). Processes of reproducing type and line work by a contact reflection method which can replace the camera are described. Brief instructions are given for the "Manuldruck" process which was developed in Germany in 1922, using a glass plate coated with bichromated collodion emulsion, and for the Typon process in which the coated glass was replaced by a high contrast silver chloride paper. The process used by the Army Map Service during the war to reproduce maps and other type and line work is also described.